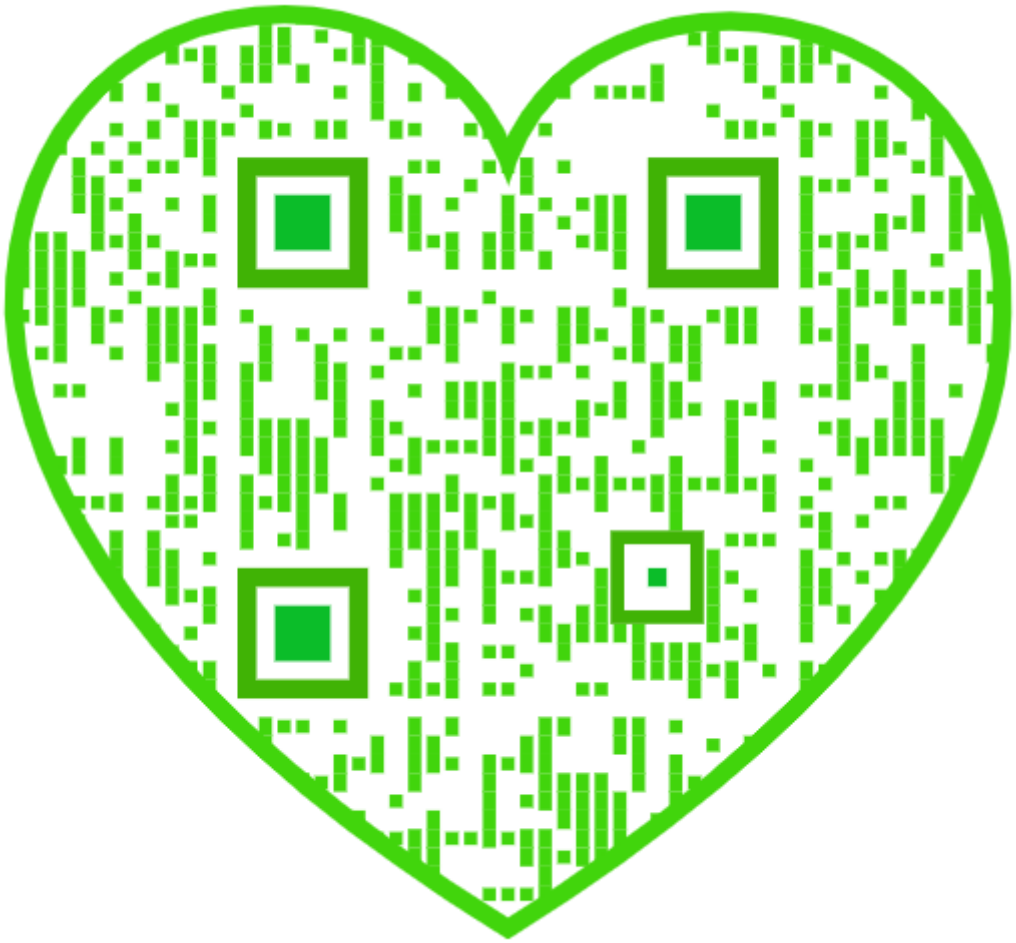
The Farmers' Veterinary Guide



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The Farmers' Veterinary Guide

A Practical Treatise on the

Diseases of Domestic Animals,

With Instructions for Diagnosis and Treatment.

Compiled from the Best and Ablest Authorities, Supplemented by Counsel from an Experienced Staff of Veterinary Surgeons.

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DISEASES OF THE HORSE.

Their Causes: How to Know and How to Cure Them.

INTRODUCTION.

The various diseases of which the horse is subject, embrace nearly all those affecting the human family and including among them, as most common, diseases of the skin and its integuments, those of the muscles, of the ligaments, and of the bones, quite rare in the human family, and to which the horse might be completely exempt, were it not for the ignorance, and in very many cases, the brutality of the master in over-driving, over-weighting, leaping, beating, neglect in clothing when heated, carlessness in grooming, want of proper ventilation in stables, and the withholding of proper and sufficient food. Take away these causes of disease and the labors of the veterinary surgeon would be light. We should see but little of caries of the bones, causing degeneration of the substance; of spavin, curb, ringbone, splint; of injuries of the sinews and tendons, causing breaking down; swelling and other of the most serious affections; poll evil and other fistulous diseases; of fractures; of rheumatism; founder, including grease, inflamed glands and veins, cracks of the hoofs, quittor, hernia, and all that class of diseases attacking the faithful servant of man, and henceforth rendering him useless for the purposes of pleasure or profitable labor. Instead of ending the sufferings of the tortured animal by mercifully taking its life, many owners for the sake of the few paltry dollars received, transfer the once favorite steed to some one else equally inhuman, who thenceforth drives and goads the sufferer to labor under the most torturing circumstances, until the animal economy, entirely disorganized, perhaps by years of such unmitigated torture, droops, and dies.

The object of this treatise is to so enlighten the horse owner in the nature of disease as to enable him to determine whether treatment can be made effective—if so, what to do; and especially is it the purpose to so acquaint him with the causes, that occasion for treatment may be averted. By a study of the facts

we give it may be easily known whether cure is possible, and if not it is more merciful to kill and end the misery of the poor animal.

For all the diseases we have mentioned but little medicine is needed. Rest and nursing are most needed—often months of rest and care, as in the case of spavin, commencing in inflammation and ending in the deposition of bony matter, stiffening of the joint, or, as in the case of exostosis of the heads of the bones, they in time become quite anchylosed, when lameness ceases from the suspension of action of the joints caused by their compelte solidification or growing together.

That the reader may form a more correct idea of what we here write, and have it brought plainly to view, we present an illustration of some of the principal diseases of the bones and tissues, caused generally by abuse, with a short description of their origin. The treatment will be given in the proper place.

Caries of the Jaw. Ulceration of the lower jaw, sometimes ends in mortification. Caused by bruises from barbarous bits and curb chains.

Fistula of the Parotid Duct. Fistulas are caused by bruises or undue compression of the parts producing inflammation and abcess.

Bony Excrescence (Exostosis of the jaw). A blow upon a bone will produce inflammation followed by exostosis (bony growth through increased nutrition)—that of the joints being fearfully painful.

Swelling by pressure of the bridle, causing inflammation, and sometimes tumors.

Poll Evil A painful fistulous disease, often difficult to cure.

Inflamed Parotid Gland. Caused by a bruise or compression.

Inflamed Jugular Vein. Caused in various ways.

Fungus Tumor, from compression of the collar. The result of galls and subsequent want of care, and inattention.

Fistula of the Withers, caused generally by pressure of the saddle.

Saddle Gall, caused by a bad fitting saddle; sometimes ending in sitfasts.

Tumor of the Elbow, caused generally by interference of the shoe in lying down; sometimes by a blow. Called also, **Capped Elbow.**

Induration of the Knee, caused by blows in falling.

Clap of the Back Sinews, caused by severe exertion in running and leaping, destroying the integrity of the sinews of the legs.

Mallenders, scurfy manifestations at flexions of the knee, sometimes becoming cracked and itchy.

Splint, caused by blows, kicks, etc., on the shins. They are to be dreaded as interfering with the action of the sinews.

Ringbone, caused by starting heavy loads, or excessive pulling in going up hill.

Tread Upon the Coronet, the contusion of the shoe of one foot by treading on the other, causing laceration of the coronet and of the horn of the hoof.

Quittor, confined pus, from prick of the sole, corns, or injury to coronet.

Quarter Sand Crack. Imperfect secretion caused by dryness of the hoof; rupture of the laminae.

Contracted Hoof, or ringed hoof of a foundered horse. The result of Laminatis.

Capped Hock. Injuring the point of the hock.

Sallenders. Scurfy eruption on the seat of the flexion of the hock Similar to Mallenders.

Spavin. Inflammation causing painful bony enlargement, sometimes stiff joint. Caused by blows, slipping and hard work, often from weak limbs.

Curb. Inflammation and lameness of the posterior part of the hock, ending in bony formation. Caused by wrenching or straining the limb.

Swelled Sinews, caused by strains or bruises, producing inflammation, and ending in enlargement.

Thick Leg, caused by various injuries to the joint. Any inflammation may result in a thickening of the integuments. In all inflammatory difficulties of this nature, including spavin, curb, etc., cold water faithfully applied at the outset will be indicated, but often the trouble is not known until too late for cold water. The warm water fomentations will then be indicated.

Grease, caused by debility, excessive labor and neglect, filthy surroundings, from stoppage of the secretions. Scratches are from the same cause, as working in the mud without proper cleaning, etc.

Toe Sand Crack, caused by the same difficulty as quarter sand crack.

Quarter Crack. (See sand crack).

These are occasioned generally by severe labor of animals not strong in the feet, by which the walls are ruptured, by breaking the hoof with the calk of another foot. False quarter is occasioned by the absence of the outside and harder portion of the hoof.

Ventral Hernia. Rupture by which the bowel lies next the skin. When hernia is accompanied with strangulation it becomes dangerous.

Rat Tail, loss of the hair of the tail.

CHAPTER II

Diseases of the Skin and Sub-Cutaneous Tissues.

Of the skin diseases there are two classes: those resulting from neglect and general bad treatment, and those due to disorders of the internal organs with which the skin is in sympathy, or which inflame it by unnatural excretions or irritants in the blood.

SCRATCHES.

Causes. These are various; as, clipping the heels, which is sometimes done, and thus destroying nature's covering, so as to allow the parts to become chilled; washing off the legs with soap and water without subsequently thoroughly drying them, and then suffering them to be exposed to cold air; standing in snow or snow-slush; standing in or upon hot and steaming manure of any kind, while in stable; or being long in mud and filth while in service and not subsequently carefully cleaned. Anything that will produce inflammation of the skin of the heel, or in any way weaken it, may produce scratches.

As is the case with other local disorders, this is most easily and rapidly developed when the horse is not in a condition of good general health; but foul stables, while furnishing the irritating filth immediately to the seat of this disease vitiates the air also, and thus tend to bring about a two-fold trouble.

It is believed to be sometimes due to the existence on the skin of parasitic plants and insects.

The sure prevention is to keep the horse, if possible, in good general condition; and to confine him, when he must be confined at all, only in a dry, clean, and well-ventilated stall. When he is forced to be worked during the day in mud or slush, he should be neither stabled nor turned out to pasture until both his feet and his legs are well washed and thoroughly dried.

How to Know It. Scratches are said to be unknown to European horsemen; but it is so well known in the United States as to render a description well nigh

unnecessary. It appears on the back part of the foot, generally of the hind foot, and extends from the heel to the fetlock. It has been known entirely to encircle the foot, and to extend upward to the hock and to the knee. The parts are sometimes hot, swollen and sensative before any crack or ulceration takes place; then they become dry and scaly, and crack open by ordinary motion. A horse thus affected is apt to manifest a disposition to walk stiffly with his hind legs (when the disease is seated in the hind heels), wider apart than ordinary, and to throw his foot rather violently forward when an effort is made to examine it.

It is often the case that at first there are little patches of a thick, dry, scabby covering of the skin; and these spread and inflame until they form a solid mass of scab and matted hair. These scabs may be distinguished from those which sometimes appear in other skin diseases by this, that they have an unusual itchiness, which leads the horse to rub them as much as possible; and he often does this until they bleed and become raw. This disposition of the suffering creature to scratch himself is said to have originated the name by which the disease is known.

What to Do. In cases where the patient is in good condition, and the disease is in its incipient stage, a thorough cleaning of the parts with castile soap and warm water, and applying an emollient or softening poultice for a day or two, with rest, will be sufficient. If there seems to be feverishness of the system, a dose or two of Epsom salts to move the bowels, given in doses of from one to three ounces at a time, will be beneficial.

The following, if for ordinary cases, is a most efficacious and easily used remedy:

½ Oz. powdered gum camphor,
1 Oz. gum myrrh,
1 Fluid Oz. sulphuric acid,
1 Fluid Oz. spirits of turpentine,
1 Pint of lard.

Mix thoroughly, and rub the ointment well upon the heels once a day. The legs and feet should be washed with soap suds before every application.

When the disease is chronic, and proud flesh has appeared, make a poultice of ground flax seed and lime-water; sprinkle burnt alum over the poultice, and apply. Use two or three poultices a day until the proud flesh has evidently disappeared, then use the ointment as above directed.

GREASE, OR CRACKED HEELS.

Causes. This disease is but a modification of scratches and of thrush partaking more of the nature of thrush, however, than of scratches, as it is confined

almost exclusively to the heel, the seat of thrush, which is seldom attacked by the scratches.

It is occasionally the result of constitutional weakness or derangement. When the system abounds in morbid matter, its tendency is towards the heels, and debility is felt in the distended vessels remote from the vital organs, ending in inflammation of the skin of the heels, distension of the sebacceous glands, a stinking deposit on the surface, and a purulent discharge through cracks.

Cutting away of the hair of the fetlock, and thus exposing to sudden and protracted cold parts which it is designed to protect, often causes this affection, even in animals of otherwise good condition.

Frequently, however, it may be regarded as most probably a secondary disease, originating in some other, which has resulted from careless or inhuman treatment, or from constitutional weakness.

It is not contagious; but filth and want of attention will produce it in nearly all horses similarly subjected to their influences.

How to Know It. It is manifested in nearly the very same symptoms as thrush, as given in the following section; but there is one striking peculiarity which distinguishes it from thrush, foot-evil, and other disorders of that kind—the heel cracks open. In a healthy state, the heel of the horse is moistened, and so kept from becoming dry and hard, by a constant secretion and discharge of an oily fluid from the cellular tissues under the skin. When this is obstructed the skin becomes dry and feverish, and looks scurfy and hot. It soon thereafter cracks, and the pent-up oily secretion, now turned to a foul, yellowish water, flows out. As the flow of matter increases, it becomes more and more thick, sticky, and stinking; and if not attended to, the heel and sides of the foot become a mass of ulcerated excrescenses.

It sometimes manifests itself by the oozing out of a thin matter through the pores of the skin from some deep-seated disease of either the coffin-bone or the navicular joint—most frequently the latter. The more effective treatment of this case would of course be that directed to the healing of the primary disorder.

What to Do. The treatment necessary is similar to that for scratches. In the first place, see to it that the causes which have induced it shall no longer operate. If the disease is secondary, it must be somewhat difficult to manage; and the animal should be allowed to rest, taking only such exercise as nature prompts, in an open pasture, except in bad weather. When it is necessary to confine him, give him a good stable, dry litter, and pure air. Remember that rest is one of the first conditions of success, while constant driving or any other labor will most probably defeat the ends of the physician.

If the disease is discovered in its early stage, and the general health of the

animal has not suffered, cleanse the parts well with tepid water and castile soap, and make occasional applications of camphorated corrosive sublimate, say once a day, till a cure is effected. A few applications will generally be found sufficient.

If the horse is thin in flesh, and in a low state of health from the effect of this disease, mix sulphur and rosin, in the proportion of two parts of the former to one of the latter, and give him a quarter of a pound of this every third day until he has taken three or four doses. Meanwhile, thoroughly saturate the parts at least every other day with the liniment till the disease is thoroughly conquered.

If the liniment forms a scab upon the heel, so hard and dry that the remedial effects seem to cease, omit the liniment for several days and keep the heel well greased. The scab will come off, and then the application of the liniment may be resumed. This course must be persevered in till a cure is effected.

The liniment should be applied at night, and the horse should not be turned into pasture when the grass is wet with dew or rain—at any rate, not till six hours after the application has been made.

In summer pasturage will in general afford sufficient food, but in winter it should be more nourishing, yet green and succulent as far as possible. Roots and good bran mashes ought to be given in reasonable quantity. Grain as a regular diet in this case, is objectionable, on account of its tendency to produce inflammation.

After three doses of the sulphur and rosin have been given, as directed, the following mixture given every night until all traces of the active disease have disappeared, will be found an excellent tonic or strengthening medicine, and having the effect, too, of giving healthy tone to the skin:

½ Oz. liquor of arsenicalis,
1 Oz. tincture of muriate of iron,
½ Pint of water.

This constitutes a dose. Mix and give as a drench.

When it is difficult to procure the above mentioned liniment the following may be prepared and substituted therefor:

8 Oz. tar,
1 Oz. beeswax,
1 Oz. rosin,
1 Oz. alum,
1 Oz. tallow,
1 Oz. sulphate of iron,
1 Drachm carbolic acid.

Mix, and boil over a slow fire, stirring as long a dirty scum appears, and then add 2 oz. of the scrapings of sweet elder.

THRUSH.

Causes. This, like scratches, results for the most part from foul stables—the horse forced to stand in mortar of dung and urine—or from working in muddy and filthy places, without having his feet and legs well cleansed when he is unharnessed for the night.

It is sometimes caused by injuries to the frog of the foot, as bruising, snagging, and improper shoeing.

It may arise also from a gross habit of body, producing inflammation of the sensitive frog, when a spongy substance is deposited instead of sound horn; and this breaks away and leaves the frog ragged and tender.

Lastly, it may be secondary, having resulted from other diseases, superinduced by want of cleanliness and care.

How to Know It. In some cases, the only means of detecting the existence of thrush is a peculiar smell, or by very careful examination, as the hoof may show no change, and the frog may not be found lengthened and deepened, the opening extending to the sensitive horn within, and this, when thus closely observed, shows discharge of matter.

The progress of the disease is often slow, though showing meanwhile no disposition to heal; till after awhile the frog begins to contract, becomes tender, grows rough and brittle, and emits a more offensive discharge. The horny part disappears and a hardened substance takes its place; this easily scales off and leaves the sensitive frog uncovered.

In its advanced state, it is easily detected, as it is characterized by a continuous discharge of offensive matter from the cleft of the frog. If not reasonably attended to, proud flesh sprouts up and as this spreads, the whole foot becomes involved in canker.

What to Do. In the first place, if the causes which have produced the disease are still in operation, remove these. In any case, when the horse is to be stabled use a dry litter, and see that the stall is kept clear of moist excrement, and that it is well ventilated.

If the disease is secondary, the treatment must of course be directed to removing the affection from which it has sprung.

In its simple stages, it may be easily cured in the following manner:

Clean well with soap suds and allow to dry. Then wet a piece of cloth or string of tow with the liniment, camphorated corrosive sublimate, of the frog and the corresponding part of the heel. Remove the tow next morning. Con-

tinue this treatment (putting in the saturated tow at evening) for four days, then omit a day, and so on until a cure is effected.

Or, sprinkle a small quantity of blue vitriol in the cleft of the frog and then fill up the cavities with cotton, which so press in as to keep out all dirt. Repeat until the foot is cured.

When the disease has become chronic it is hard to effect a cure and the following course ought to be adopted: Clean away all the ragged portions of horn so as to reach the sensitive parts. Then smear some tow with this ointment:

1 Dr. ointment of nitrate of mercury,
1 Oz. zinc ointment,
4 Drops creosote.

Mix well and having smeared the tow with the preparation as directed, press it into the cleft of the foot and retain it there by a bar shoe, slightly tacked on. Apply this every day observing its effects. If found not to do well, try a wash made of six grains of sulphate of zinc dissolved in one onuce of water. As the frog grows, it should be kept supple with tar ointment. The bar shoe should be kept on until the frog is fully developed. Some degree of pressure must be employed by means of tow and this pressure should be increased as the horn increases in substance. When proud flesh is obstinate it may be burnt away at once by forcing a stick of nitrate of silver (lunar caustic) into it.

In chronic cases, the horse should have, once a day in his food, an alterative dose (a mild improver of health) say a tablespoonful of sulphur and powdered sassafras, of each an equal quantity.

The following mixture is sometimes found valuable where there is a tendency to proud flesh. The ingredients are to be well stirred together and sprinkled into the cleft of the frog where it must be confined in the same manner as directed for powdered blue vitriol alone:

1 Oz. powdered blue vitriol,
1 Oz. copperas,
2 Oz. burnt alum,
½ Oz. white vitriol.

SWELLED ANKLES.

Causes. This affection invariably arises from a diseased condition of the feet. Its origin may sometimes be traced to diseases of the navicular and lower pastern joints, but it is known to proceed for the most part from hoof rot. It seems occasionally, however, to result from a plethoric condition of the general system, a superabundance of blood, hard work, severe strains, etc., etc.

How to Know It. Confined almost wholly to the ankle joints, it is not diffi-

cult of detection—the only point of importance being to determine whether the swelling is merely spasmodic and temporary, or whether it is a result of a primary disorder which requires attention. It is generally perceptible of a morning and disappears during the day.

What to Do. If the swelling proceeds from plethora, or too great fullness of the general system, give an occasional dose of Epsom salts, to reduce the tendency to inflammation, and feed upon green and succulent food.

If it proceeds from soreness of the bottom of the foot, apply camphorated corrosive sublimate freely every day for four days, then omit two days and again apply.

If there is any appearance of thrush or cracked heels, treat as directed for the removal of these.

SWELLED LEGS.

Causes. Swelled legs may be the result either of an undue deposit of serum or watery particles of the blood, or of inflammation of the cellular tissue lying between the skin and bones in those parts of the leg most destitute of muscles.

How to Know It. The leg becomes greatly swollen and looks as though it was stretched to its utmost tension. Occasionally the swelling appears almost suddenly and then as suddenly subsides, in which case the cause may be considered as having but just begun to operate; and if in its attack, and violent, the skin is hot, dry, and extremely tender, and the pulse is quick and hard, while a peculiar lameness speedily sets in. The swelling may extend to the sheath and along the belly as far as the muscles of the breast.

What to do. If the disease seems to be merely undue deposit of serum owing to confinement, nothing more may be necessary than to give the animal a dose or two of nitre, daily, to act upon the kidneys, and to exercise him regularly to induce absorption. In the administering of a diuretic, however, even so simple as niter, care should be taken that it is not left to ignorant and irresponsible grooms, since it may be given in excess and result in disordering the kidneys and thus ultimately inducing the very disease which it is intended to remedy.

When there is a tendency to swelled legs which manifests itself in the morning, but disappears during the exercise of the day, an excellent preventive is to stand the horse in cold water to his knees half an hour just before night, and then rub dry before stabling, but care must be taken to dry the legs thoroughly, or the plan is plainly objectionable. If it should be found not to yield to this, administer the niter in moderation, as previously directed, and exercise the horse regularly, causing him to sweat, both of which have a tendency to

diminish the accumulated fluid, and to assist the veins and absorbent in their functions.

In case the horse is in a debilitated condition and the swelling is manifestly owing to the sluggishness of the circulation, he should be well fed on nutritious diet and the leg or legs should be firmly, but not tightly, bandaged. Then prepare the following—a tonic and somewhat stimulating medicine:

½ Oz. pulverized assafoetida,
1 Oz. cream of tartar,
2 Oz. powdered gentain,
2 Oz. African ginger,
4 Oz. finely pulverized poplar bark.

Rub these ingredients together in a mortar until thoroughly mixed. Divide this into six doses and give one, in the food, every night till exhausted. The bandage should be removed from time to time, and the limb subjected to a brisk hand-rubbing, or rubbing with a medium coarse cloth.

If the disease has become chronic, and the animal is much debilitated, the following more stimulating medicine should be used:

1 Oz. powdered golden seal,
1 Oz. gentain,
1 Oz. balmony, (or snakehead),
½ lb. flax seed.

Mix well, and divide into six doses, of which give one night and morning in the food. Bandage and rub alternately, as previously directed. If the disease does not speedily show signs of yielding to this treatment, apply every night, omitting the bandage, the following liniment:

2 Oz. essence of cedar,
1 Oz. tincture of capsicum,
1 Pint new rum.

SURFEIT.

Cause. This disease, sometimes known as purigo, has for its predisposing cause a thick and impure state of the blood, with deranged condition of the digestive organs. When the animal is in such state, any sudden exposure to chill, especially when he has been heated, will produce surfeit-pimples, and unless the general condition be attended to a confirmed case of skin disease may be the result.

How to Know It. No symptoms precede an attack of surfeit by which its approach may be known. The pimples or lumps, in quick surfeit, suddenly ap-

pear, and almost as quickly subside. When a case of confirmed surfeit has set in, the skin is hard, dry, and feverish.

What to Do. If the general condition of the horse is good and the affection has evidently arisen from sudden exposure or some other imprudence on the part of the person having him in charge, little treatment will be necessary. Prevent costiveness and keep moist provender. Give arsenical drink once a day, a pint at a time, to act on the skin, until cure is effected, being careful, meanwhile, if the weather is cool, to keep the horse comfortably warm—blanketing him if necessary; and a half hour's walking exercise should be given him daily. The arsenical drink consists of these ingredients in the proportion named:

1 Fluid Oz. arsenicalis, or Fowler's solution,
1½ Fluid Oz. tincture of muriate of iron,
1 Quart water.

Keep him from becoming costive by cooling and laxative food, as previously directed; see that he is comfortably stabled, if the weather is at all inclement, and give on several successive nights, the following alterative:

2 Drachms legitated (finely ground) antimony,
3 Drachms niter,
4 Drachms sulphur.

MANGE.

Causes. This is sometimes brought about by the same causes as surfeit; or rather, it is indeed but an advanced chronic stage of that disease; though in some cases of the same kind, it is of a much more serious character, and highly contagious.

How to Know It. The skin is at first scabby, the hair comes off, and the outer skin becomes broken into little scale-like pieces. These fall off, or are rubbed off, and leave the parts raw and sore. The general appearance of the skin where the raw spots are not too numerous is a dirty brown, and it is loose, flabby and puckered. The horse is impelled by itching, to rub himself frequently and violently, and he thus leaves his scurf, dandruff, and in the more advanced stage, his parasites, at every place.

Usually, where the disease is engendered in the animal itself, it appears first on the side of the neck, just at the edge of the mane and on the inside of the quarters near the root of the tail.

When it is the result of contagion, and the horse may at first be in health, but the constant irritation makes him feverish, the hair falls off as in the first case described, leaving the skin in those places almost bare, and little red pimples appear here and there.

What to Do. The most effectual preventive, it will be readily inferred from the preceding statement of cause, is cleanliness. In no case should a healthy animal be allowed to occupy a stable where a mangy one has been kept until it shall have previously been washed with water strongly impregnated with sulphur and chloride of lime—say half a pound of powdered sulphur and one pint of chloride of lime to each gallon of water. If the stable is thoroughly cleansed of loose litter and dirt, and all parts that may have been rubbed against by a mangy horse perfectly saturated with this solution two or three times, on as many consecutive days, there can be no danger in using it. Clothing, curry-comb, brush, etc., that may have come in contact with such animal, should be burned up.

If starvation, weakness, and general ill condition have caused the mange, a patent means for its removal will be found in giving him clean quarters and good nourishing food; which, however, should not be at first of a heating nature. Generous pasturage, unless the weather is damp, will be sufficient; otherwise, a full supply of oats and chop food should be given. It cannot be too much insisted upon that especially while treating a horse for disease his stable should be dry, well ventilated and properly supplied with litter.

Have him as thoroughly cleansed of scab and dirt as possible, with a wisp of hay, and by softly and lightly using a curry-comb. Then prepare a liniment of the following ingredients and in the proportions here given for greater or less quantities:

1 Quart animal glycerine,
1 Gill creosote,
½ Pint turpentine,
1 Gill oil of juniper.

Mix all together and shake well; and with this saturate the whole skin, as nearly as possible, rubbing in well with a soft cloth. Care must be taken to rub it in thoroughly. A little well rubbed in is better than much merely smeared on.

Leave him in this condition two days; then wash him well with warm water and soft soap; stand him in the sunshine if the weather admits, and rub with a wisp of hay or with suitable cloths until he is dry; after which, anoint him pretty well all over with the mixture described, and **rub it in.** This course should be pursued until a cure is effected. Two to four applications will generally be found sufficient, even in obstinate cases, if care is taken as to food and drink. The following alterative will be found beneficial:

1 Oz. tartarized antimony,
2 Drs. muriate of quicksilver,
3 Oz. powdered ginger,
3 Oz. powdered anise seeds.

Mix with mucilage so as to form a consistent mass; divide into six balls, and give one every morning till the eruption disappears.

Care must be taken that the patient is not exposed to rain or heavy dews while under this course of treatment.

RINGWORM.

Causes. There are two kinds of ringworm; one simple, of spontaneous origen, and non-contagious. The other contagious. The first is usually the result of indigestion or confinement in close and foul apartments, as in filthy and ill-aired stables, railroad cars or ship holds. The latter, or contagious kind, is found on horses of good condition, as well as on diseased and neglected ones, and is produced by vegetable parasites in the hairs and hair-glands.

How to Know It. It is especially common in winter and spring, and appears on the face, neck, shoulders, sides, and sometimes elsewhere.

When non-contagious, it may usually be known by its appearing as an eruption of small blisters, about the size of a wheat grain, on inflamed patches of skin. These assume a circular form; and if not seasonably attended to, the circle enlarges and covers fresh portions of skin.

The contagious type appears in round, bald spots, covered with white scales, and surrounded by a ring of bristly, broken, or split hairs, with scabs around the roots, and some eruption on the skin. These broken hairs soon drop out, and a wider ring is formed. The most marked characteristic of the contagious or parasitical ringworm is the splitting of the hairs in the ring, and the perfect baldness of the central part.

Occasionally the patches, in either form of the disease, assume an irregular rather than a really circular form.

What to Do. If a simple, non-contagious case, shave the hairs as closely as possible from the affected part, and paint with tincture of iodine; or, if scratches or little ulcers have appeared on the patch, rub it with the following stimulating and healing ointment:

10 Grains nitrate of silver,
1 Oz. lard.

If it is a case of the contagious or scaly variety, wash the patches thoroughly with soft water and soft soap, and then rub every day with the following ointment:

½ Drachm iodine,
1 Drachm iodide of potash,
1 Oz. cosmoline.

If through neglect and long standing it has ulcerated, use this ointment twice daily:

6 Oz. pyroligenous acid,
5 Oz. linseed oil,
2 Oz. spirits of camphor.

HIDE-BOUND.

Causes. Strictly speaking, this is not of itself a disease, though the skin is in a peculiarly abnormal condition, but the result of a diseased condition of the general system or of derangement of some specific vital function. With respect to the causes from which it arises, it is somewhat similar to mange; but, unlike mange, it is neither eruptive nor contagious.

Poverty and cruel usage—the food being deficient in quantity or quality, and the labor onerous—bringing on impaired digestion; the blood becomes thick, dark, and feverish, because the secretive processes are sluggishly performed; the skin sympathises with these internal disorders, and the lubricating fluid through the pores is suspended; and then, instead of remaining soft and pliant, it becomes dry and adheres to the body.

How to Know It. The skin is dry and hard, and the hair is rough and rusty. Both are evidently destitute of that oil by which in health they are kept in soft, pliant, and glossy condition. Adhering almost immovably to the ribs, legs, neck—almost every part of the body—the skin cannot be caught up in folds with the hand. At times it appears scurfy, and the exhalants (having the quality of giving out or evaporating) pour forth unusual quantities of matter, the more solid portions of which form scales and give the horse a filthy appearance.

The excrement or dung is dry, hard, and black.

What to Do. Especial pains must be taken to discover, if possible, what specific disease has given rise to this state of the skin. If the cause is obscure, direct the treatment to restoring a healthy condition of the digestive organs. Begin by bettering his treatment in every way. Instead of hard labor, he should have only gentle exercise, and instead of being left exposed to the rain, snow, and merciless winds, in barren pasture land or filthy barnyard, he should be well sheltered, and, in winter, blanketed—using for this purpose two blankets joined along his back by tapes so that a space of an inch or two may be left for the escape of insensible perspiration. Instead of allowing the skin to grow clogged, torpid and dead for want of cleanliness and friction, he should have regular daily currying and brisk rubbing with a good brush or coarse cloth, which will materially aid in restoring healthy action of the skin.

If it is pasture season, give him a run at good grass during the day; but

stable at night in a clean stable, furnished with dry litter, and give him a generous feed of bran and oats, or moistened bran and chopped hay. Mix with the food night and morning, the following alterative:

3 Oz. powdered sassafras bark,
3 Oz. sulphur,
3 Oz. salt,
2 Oz. bloodroot,
2 Oz. balmony,
1 lb. oatmeal.

Mix, and divide into twelve doses.

SADDLE GALLS OR SIT-FASTS.

Causes. These are swellings, sores, and tumors, caused by ill-fitting saddles or harness. Different names are applied to them according to their appearance and character. When a mere heated swelling on the horse's back or shoulders is unattended to, while he is kept in constant use, it sometimes assumes the appearance of a dead patch of skin, and is then called a warble; when these ulcerate and discharge pus, and a leather-like piece of skin is firmly fixed upon the top of it, the name sit-fast is applied; and when, by the use of saddle or harness before a warble or sit-fast is thoroughly healed, a hard, callous lump is formed, it is called a navel gall—said to be so called because it is generally on that part of the back opposite the navel.

How to Know It. These swellings, sores, and tumors require no further description than has already been given.

What to Do. The first and most essential thing is, that the animal shall be allowed to rest, or at any rate be subjected to such labor only as will not require the same chafing, abrading saddle or harness which has produced the trouble.

Then, if it is merely a gall or scald—a heated, tender swelling, without either suppuration or hardness—bathe with cold salt and water two or three times daily. When the heat and tenderness are sensibly reduced, anoint occasionally, until the lump has entirely disappeared, with a mixture of tar and olive oil, equal parts.

If it has assumed the character of a sit-fast, do not use the knife, nor try to tear the dry skin away, but bathe with warm soft water, and then apply a poultice. This must be repeated, if necessary, until the callous skin is easily removed, and then anoint frequently, until the sore is healed, with the following:

1 Dr. iodide of potash,
6 Drs. simple ointment,
2 Drs. glycerine.

When it has reached the stage of navel gall—hard, grisly, almost horny—apply daily the camphorated corrosive sublimate. Shake the bottle well before pouring it out; use a mop with which to put it on; then, when it is thoroughly saturated with this liniment, use a hot iron with which to dry it in.

White lead and linseed-oil mixed as for paint, is almost invaluable in abrasions, or galls from the saddle or collar, or from any other cause; it will speedily aid the part in healing.

Applied with a brush to the leg of a horse, the outer coating of hair and skin of which was torn off, caused it to heal and leave no scar. It is good for scratches and all sores upon horses, or other animals. It forms an air-tight coating, and soothes pain. Every farmer should keep a pot and brush ready for use. White lead is the carbonate of the metal, and when pure is very white. That having a grayish tint is impure, being generally adulterated. For use as a paint, a lead color is produced by adding lamp black, and a drab or stone color, by adding burnt umber.

In applying it for scratches, first wash them clean with soap and water, then apply.

FUNGOUS COLLAR TUMOR.

Causes. This in its nature is essentially the same as that described in the preceding section as saddle gall, or sit-fast—differing, however, in location and specific cause. It is an inflammation and swelling beneath the large flat muscles that covers the front of the shoulder, and is caused by the chafing of the collar.

How to Know It. It is scarcely necessary to undertake farther description of a well-known, visible affection. It is usually found near the point of the shoulder; and the character of the tumor as to simplicity or severity can be readily determined by examination. If of considerable standing, it will be found so hard as to render it almost impossible to detect any fluctuation that would indicate the presence of matter. Where there is much swelling, however, there is almost invariably matter, and no cure can be effected until this is removed. In cases less marked there will be a small, hard or indurated lump without matter.

Under similar conditions as those mentioned in the preceding section, it may form a leathery patch in the center and become a real sit-fast.

What to Do. The tumor must, if possible, be so treated as to leave no scar or lump, as this would be easily irritated by the collar upon subsequent use, and prove a source of constant trouble. The first thing in order will be to take the horse from work, if at all practicable. If not, use a breast-strap, so as to prevent all further chafing. If the swelling is recent, apply cold water often, or cover the part with a wet rag hung over the shoulders in such a way as to remain in contact with the swelling. This must be kept constantly wet.

But if the tumor is large, and of long standing—already hardened and containing matter deeply hidden, open with a knife—making a smooth, vertical cut, and of sufficient depth to thoroughly evacuate the pus. Syringe the opening well every day with the following solution:

30 Grains chloride of zinc,
1 Quart water.

If the wound seems inclined to heal and leave a lard lump in doing so, discontinue the injection, and rub frequently with the following liniment to promote the absorption of the callous or gristly formation:

1 Oz. iodine,
12 Oz. soap liniment.

WARTS.

Causes. It is difficult to point out anything that may be implicitly received as the cause of these excrescenses. Generally accompanying a plethoric condition, they may be considered as owing their origin primarily to high feeding and insufficient exercise. This, however, must not be taken as conclusive, since they not infrequently appear upon active animals, of meagre habit.

How to Know It. There are two kinds of these formations, one of which is fibrous, white, and gristly or cartilaginous, but somewhat spongy lump, contained in a sac or cell which has taken its rise from the outer or scarf-skin; and the other is a somewhat cartilaginous substance, not inclosed, but adhering firmly to the skin—a hard excresence—the "seed wart"—which is too well known to require particular description.

What to Do. If there is doubt as to the character of the wart, the matter may be speedily determined by running a sharp knife through it; when, if a blood or sac wart, the contents will come out, accompanied by more or less copious bleeding; wheras, the seed wart will in the case be merely divided by the incision, each part retaining its firmness or consistency.

When the blood wart is thus opened, nothing more will be necessary than to touch the part with a solution of chloride of zinc, one grain to an ounce of water, or lunar caustic. When these warts are attached to the skin by narrow bases, or small stems, they may be clipped off with knife or scissors, and the part slightly burned with caustic as previously directed.

If the growth is of the fixed kind, or seed wart, remove by means of scissors or knife when standing singly; but if the stem or base is large, or if the warts grow in bunches, too numerous and too close together to be cut away, pick off or otherwise chafe the rough outer surface so as to make it bleed; then with a

stiff brush rub in yellow orpiment wetted with a little water, and in a few days they will come away, or may be rubbed off, and leave a healthy sore, which soon heals. If the entire wart does not come off by reason of one application, repeat.

VERMIN.

Causes. Vermin are both a cause and a consequent of skin disease; and being also bred in the hairy covering, perhaps in the very skin itself, they are properly treated in this connection.

How to Know It. The horse infested with vermin will usually manifest his uneasiness by biting and rubbing himself; but their presence may be unmistakably detected by a more or less careful examination of his coat.

What to Do. If the horse is suffering from some skin disease requiring treatment, the means adopted for this will almost invariably suffice of themselves to remove the vermin; but where no such disease exists, and it is a simple case of lousiness, anoint him with the following salve:

1 Dr. carbolic acid crystals,
1 Quart fresh lard.

Rub it upon every part of the body thoroughly; wash with warm water soap suds next day; repeat if necessary—at last washing and drying.

MALLENDERS AND SALLENDERS.

Causes. By these terms are denoted oozy, scurfy patches upon the knee and hock—those which appear back of the knee being called (for what reason nobody seems to know) mallenders; and those which appear in front of the hock, sallenders. They spirng from idleness and neglect—an impure state of the blood having been brought on by heating and unsuitable diet, and disorders of the bowels, liver or kidneys.

Though of no serious importance as diseases, they are unsightly, and, if neglected, they result in troublesome sores.

How to Know It. They first begin as a moist tetter, apt to escape observation until they appear in a roughened state of hair about the parts mentioned, under which the skin is scurfy, feverish and somewhat tender. Itching of such severity sometimes attends them as to render the horse restive and hard to keep under restraint.

What to Do. In the first place attend to the cleanliness of the horse and put him upon a regular course of moderate exercise. Give him twice daily, night and morning, a pint of the excellent alterative and tonic drink:

1 Fluid Oz. liquor arsenicalis,
1½ Oz. tincture muriate of iron,
1 Quart water.

Rub the parts affected two or three times a day with an ointment made as follows:

1 Oz. animal glycerine,
2 Drs. mercurial ointment,
2 Drs. powdered ointment,
1 Oz. spermacetti.

If the scurfy places have developed into suppurating sores, use, instead of the ointment, the following lotion, saturating them well twice a day:

½ Pint animal glycerine,
½ Oz. chloride of zinc,
6 Quarts water.

Be careful that his food is such as to keep him from constipation and fever.

POLL-EVIL.

Causes. Poll-evil is the name given to a deep abcess having its seat of primary inflammation between the ligament of the neck and the first bone which lies beneath without being attached to it; and it is serious in its nature by reason of this depth and of the difficulty with which the matter formed finds its way to the surface through the strong fibrous membrane that envelopes it. If not attended to in its early stages, the surface of the first bone from the head, or that of the joint between the first two bones, becomes inflamed, and the joint or joints involved.

The disease may be said to owe its origin almost wholly to violence of some kind. A blow upon the poll by a brutal driver may very readily produce it; and much slighter causes, often repeated, result in this affection; as, the forcing on of a tight collar day after day; hanging back and so bruising the poll with bridle or halter; and excessive rubbing of that part because of itch produced by dirt accumulated about the ears and upper point of the neck and not carried away by brush or currycomb. Striking the head against low ceilings and the beams of low doorways is doubtless responsible for very many cases of this dangerous and disagreeable disorder.

How to Know It. A certain restlessness, a throwing back of the head and then returning; a drooping tendency, turning the head from one side to the other; a dull appearance about the eyes; a sluggishness of movement—all these

are sometimes observed before any symptoms of the disease may be discovered about the head.

Sometimes no notice is taken of its existence until considerable swelling and even an unwholesome discharge have set in; but more frequently an oval tumor is discovered—hot, tender, situated directly in the region of the nape of the neck, but generally inclining to one side. In the milder form this tumor is evidently superficial; and the horse moves his head with comparative ease and freedom; whereas, in the more advanced stage he carries it stiffly, and every movement of it or the neck causes great pain.

Sometimes the disorder is so deaply-seated that the tumor is not developed sufficiently to make much outward show. It is much likelier to discover itself plainly as a well-developed swelling when the hurt is superficial. In any case, it must be examined with the fingers to determine this point. Place the fingers gently upon it, and give the animal time to recover from the little scare into which this touching of a sore at first gives him; then gradually press upon the part. If the hurt is near the surface, he will flinch quickly; if deeply seated, he will be correspondingly slow in showing evidence of pain. If suppuration has already set in, it can readily be known when near the surface by a sort of fluctuating feeling; but this fluctuation can scarcely be felt at all if the matter is deep seated.

What to Do. If discovered when there is nothing more than a swelling, no matter having yet been found, remove all tendency to general feverishness by giving purgative medicine according to evident fillness of condition; allow the horse to rest; and put him on moderately light diet. Then make the following cooling lotion, and keep the swelling constantly moistened with it by having a small rag pad laid over it and saturated with the mixture from time to time:

2 Oz. tincture of arnica,
1 Dr. iodide of potassium,
1 Quart vinegar,
1 Quart camomile infusion.

If this does not reduce the inflammation and remove the swelling within a few days we earnestly recommend the aid of an experienced veterinary surgeon, meantime use, a quantity of mandrake root, mash and boil it; strain and boil down until rather thick, then form an ointment by simmering it with sufficient lard for that purpose. Anoint the swelling once a day for several days.

FISTULA.

Causes. This is sometimes known as **fistulous withers,** to distinguish it from fistula of the parotid duct. It is similar to poll-evil and is generally

caused in like manner, by bruises. In the case of fistula, these bruises may be caused by an ill-fitting collar; by a lady's saddle, particularly if awkwardly ridden; by the pressing forward of a man's saddle, especially in case of high withers; by striking the withers against the top of a low door-way; by rolling and striking the withers against some hard substance; by the biting of other horses; and by a blow of the blacksmith's hammer. The points of the spinal processes, (little projections of the spine or back bone), are hurt, inflammation sets in, and the fistulous tumor is produced. Its site is the spine above the shoulders; and it is more troublesome than poll-evil, because it is more exposed to repeated injuries.

How to Know It. The first indication will be a swelling on one or both sides of the withers, generally rather broad and flat. Upon examination with the fingers this will be found hot, tender, and apparently deep seated. If observed when first formed, it will be of uniform hardness throughout. If unattended to while in this state, the tumor soon becomes an abcess; and owing to the difficulty in the way of the matter's escaping, (its natural outlet being at the top of the shoulders), the pus sinks downward; and the abscess sometimes becomes enormous before there is any well-defined head, and before there is any opening. When it breaks, or is opened, a large quantity of extremely offensive matter flows out. Ordinarily, the tumor will come to a head in from one to two weeks. When the discharge has begun, the tumor does not begin to grow healthy and heal, but the walls of the opening thicken, and continue to discharge matter which becomes more and more offensive. The matter burrows between the shoulder blade and spinal points, and everything around seems to be rotting away; and it is both difficult and dangerous to trace the opening. In process of time several holes will appear along the course of the muscles in contact with the original abscess, and from each issues a foul discharge, till the ulcerating process seems to extend itself to nearly all the muscles of the shoulder.

The health of the animal may at first be excellent, and there may be no lameness; but as the inflammation extends, there is lameness of the shoulder, and he suffers—often greatly. He is averse to motion, and will suffer for food and drink rather than undergo the pain of trying to reach and partake of it. In its worst stages the bones extending into the sinus decay.

What to Do. Be careful to ascertain, in the first place, whether the tumor has newly risen. The matter may form in one, even while it is quite small, and it is important to know when the knife may be used to advantage.

If matter has already formed, it can be detected by the somewhat soft and fluctuating feeling of the abscess.

If discovered while still a new formation, take the horse from work, if

possible; if not, take especial pains to protect the injured joint or joints from pressure. A bruise at the point of the withers where the collar rests will not unfit a horse for the saddle, unless considerable inflammation and extending soreness has already set in; nor will a saddle bruise, farther back on the withers necessarily unfit him for harness.

A recent swelling should be immediately treated with fomentations of bitter herbs.

Boil wormwood, or mullen stocks, or life-everlasting in soft water to make a strong decoction; and apply it with large woolen cloths, as hot as can be borne, to hasten the formation of matter. When the tumor begins to soften and show signs of healing, have a suitable, fine-pointed, sharp knife. Ascertain the lowest point of the abscess. Then stand close to his side, near the middle to avoid both hind and fore feet in case of kicking or striking, with the back of the knife to the shoulder; point upward and outward, stick at the lowest edge and cut open with a free incision. Next syringe the abscess till it is as thoroughly cleansed as possible with a solution of carbolic acid and water, one part acid to two of water. Then dress with coal oil, or some convenient salve. After two days or three days, the wound should be thoroughly cleansed by syringing with warm soap suds; then use the carbolic acid and water, and repeat the oil or salve dressing; and so on till a cure is effected.

CHAPTER III.

Diseases of the Glands and Nasal Membranes.

GLANDERS.

Causes. This seems to be primarily a disease of the lymphatic and nasal glands, and confined to them; but upon this point authorities disagree, and it is contended by some that all the air passages are always affected—that it is a kind of phthisic, or incipient pulmonary disorder—and that whether the ulcers appear on the membranes of the nose prior or subsequent to the formation of tubercles in the lungs does not invalidate the proposition that the earliest external manifestations are but the effects of pulmonary derangement. The most tenable conclusion, however, is plainly this: that inflammation of the membrane of the nose, and confined to that membrane, at last results in ulceration; that the matter discharged from these is poisonous, and acts upon the glands by means of the absorbents with which it comes in contact, and is also inhaled into the lungs with the air as it passes through the nasal cavities, till at length both the circulatory and the respiratory systems are generally diseased.

It must be observed that its infectious nature is not general, but particular —depending upon inoculation with the matter exuded from glanderous ulcers, or at least from poison received in some way from the glandered animal and communicated directly to a wound or to some delicate membrane of another horse, an ass, or a human being.

How to Know It. As may be inferred from the preceding, it is not always easy to detect the actual presence of this disease, though it is often a matter of paramount importance that it should be known. Its dangerous character as an infectious disorder makes it essential that it should be known in its very earliest stages, that the proper precautions may be taken to prevent the infection from spreading.

There are some symptoms that may be observed, even before the appearance of any discharge whatever; and these may be described, though they may

sometimes prove fallacious, and are found to be but extraordinary indications of some other disease.

The first signs are those of heaviness, dullness, followed by fever; the eyes are red and unhealthy looking, while the light is seemingly painful to them. The hair is one day dry, the next, perhaps, it resumes its natural appearance, and so alternating until after awhile it becomes staring and unnatural. The flesh wastes away rapidly for a time; then, and particularly if a change of food is introduced, showing some improvement, and so alternating till at length he begins to show signs of permanently failing health and of a general debility.

These may be regarded as for the most part premonitory signs, and up to this time there may be no appearance of tumors and no discharge from the nostrils; but the animal should be subjected to the most rigid scrutiny, to discover whether there is anything to confirm the impression made by the symptoms enumerated as to the probable existence of glandered condition.

What to Do. The first thing to do, and in the first stage, will naturally suggest itself to any one who has taken the pains to inform himself of the dreadful nature of the disease. Its contagious character renders it dangerous, as has been said, not only to all of the horse kind, but to man; and no time should be lost in removing a glandered animal from the possibility of communicating the disorder to another. If stabled, there should be no connection whatever between his stall and those of other animals, as the discharge from the nostril, (in which lies the danger), may be communicated through any opening sufficient to allow horses to bite or nibble at each other. If placed to pasture, it should be known that no other horse is at all likely either to be turned in with him or to approach the inclosure. And this removal or separation should take place whenever it is observed that there is that constant discharge from one nostril which has been described, even though it may seem but watery and natural, and the horse be in the very best apparent condition. Remember that a glandered condition may long exist, and minute ulcers, in the hidden recesses of the nose, discharge a sort of limpid or clear fluid, without any of the active and violent symptoms being manifest; but that all this time the horse may be able to communicate the disease to others; and that these may die of it while he is yet in reasonably fair condition.

A horse affected with this disease, in any stage, is dangerous to the man who handles him; but he is doubly so, perhaps, when he has become a loathsome object in limbs and body as well as in head; and under ordinary circumstances it is doubtless best to destroy him as quickly as possible.

It remains now but to suggest some precautionary measures to prevent contagion, in addition to those which have already been given. If a stable is known to have been used by a glandered horse, no other animal should be

allowed to occupy it until the trough, the rack, and the walls have been thoroughly scraped and scoured with strong soap and warm water. Then take one pint of chloride of lime and dissolve it in two gallons of water, with which thoroughly saturate every part that the horse's nose may have touched. Next, whitewash the walls inside. Then burn bridles, haltars, buckets out of which he has drunk—whatever may have been about his head—and if any blanketing has been used, have it carefully cleansed by washing, or burn it up.

FARCY.

In treating of glanders and farcy there is a great diversity of opinion as to the relations in which they stand to each other—which is the antecedent, which the consequent; but the most sensible view of the matter, and the one taken by the ablest veterinarians, is this: that the two are but different manifestations of the same disease, and that they might with propriety be so treated. Regarding them separately it is difficult to say which is the more acute form, which the more chronic, as it is now generally conceded that horse afflicted with what may seem at first a well-developed case of glanders may be presently laboring under confirmed farcy—the last state apparently worse than the first; again, a case of farcy may assume the type to which the name glanders is applied, and in this case also there seems to be a development of the first into a more hopeless disorder.

DISTEMPER.

Causes. This is an epidemic disease, occurring in young horses, generally, and when it once breaks out all the animals in the stable are likely to be infected with it, unless they have already had it. Colts and young horses will take it from older ones more easily than older ones from the young.

If it is not actually generated by filth and uncleanliness in the stables, the disease is certainly aggravated by causes producing miasma and bad air in the stables. Therefore cleanliness is essential not only as a means of preventing the disease, but in rendering it of a mild type when it breaks out.

Horses will contract the disease from others when at a considerable distance. It is supposed to be communicated both by actual contact and also from germs proceeding from the breath. Hence when once it breaks out, at the first symptoms, isolate the sick animal or animals, fumigate the stable thoroughly and daily.

To do this fill the stable with tobacco smoke, both the stable from whence the sick horses have been taken, and the place where they are confined during treatment. Let the smoke be so thick as to become quite inconvenient. Make all the animals inhale as much as possible. Wash every part of the stable, and

especially the feeding places and hay racks, with a strong decoction of tobacco stems, using for the purpose cheap, rank tobacco. Keep powdered tobacco leaves in the mangers of all the horses. This being early attended to, its spread may be generally arrested.

How to Know It. The disease has three stages. In the early stage of the disease there is a dry, hacking cough, and there will be noticed a discharge from the nose, first of a thin, watery fluid succeeded by a thicker, purulent discharge of a whitish color.

The next stage of the disease shows itself in a swelling of the throat. The salivary glands, which at first were inflamed, are now closed, and pus is being formed. At length an abscess is formed.

The third stage is the suppurative stage, in which the abscess breaks; sometimes there are two. From this time on, the animal is in a fair way to mend, and every means should be taken to promote the discharge. In bad cases the suppuration may continue for weeks, and in extreme cases it may continue for months.

From first to last there is a fever. The pulse is quickened and hard. The appetite fails, both from the fever and inability to swallow. As the fever increases the eyes become dull and glassy; the hair is dry, will not lie close, looks dead; and the animal stands with its head drooped, and the whole appearance is stupid.

What to Do. The animal must be warmly clothed and kept in a thoroughly well ventilated but comfortable stable. Let the food be light, but nourishing. Mashes made of oat-meal and bran; also boiled oats, oat-meal gruel, and hay-ten should be given for drink. Give the following:

1 table-spoonful pulverized gum myrrh,
1 table-spoonful gun powder,
1 table-spoonful lard,
1 table-spoonful soft soap,
2 table-spoonfuls tar.

Mix, and put a spoonful of this mixture on a long, narrow paddle down the throat twice a day, so that it will lodge about the glands of the throat.

Let all drink and food have the chill taken off before giving it. If there is considerable fever and the tongue is coated, give a little cream of tartar in the drink. If the limbs are cold, bandage them and hand rub to promote circulation. Give once a day in the food the following:

2 or three ounces flower of sulphur,
1 ounce resin.

To be mixed in the food if it will eat, or in the drink. Give also three

ounces of sulphur per day, if the animal will take it. Wash the neck two or three times a day with a decoction of tobacco as hot as the animal will bear it. If these remedies are taken in time and faithfully applied, they will often prevent any tumor from forming. If the tumor forms, then every means must be employed to cause it to suppurate. It will then be dangerous to scatter it. If the bowels are obstructed, remove the contents of the rectum by the following injection:

4 Drachms powdered sloes,
1 Drachm common salt,
2 Drachms hot water.

Mix, and inject when blood warm.

Use every possible means to promote the formation of pus, as follows:

1 Part powdered slippery elm,
1 Part poplar bark,
1 Part ground flax seed.

Moisten with vinegar and water equal parts, quilt between two folds of cloth and apply to as large a surface as possible. When the tumor has formed pus and is nearly ripe, which may be known by a soft place where it is working its way to the surface, open it with a knife with a round-pointed blade, and if necessary increase the opening with a button-pointed bistoury, to allow free exit of matter. It will give almost immediate relief. Then apply to the swollen glands night and morning, the following:

4 Oz. spirits of camphor,
3 Oz. pyroligeous acid,
1 Pint neat's foot oil.

Mix. If the acid is not to be easily obtained use strong vinegar. Prepare the following powders:

2 Oz. powdered gentain,
1 Oz. powdered golden seal,
1 Oz. powdered pleurisy root,
1 Pound powdered liquorice root.

Mix, and divide into six powders, to be given in the food night and morning.

NASAL GLEET.

Causes. This affliction sometimes follows distemper and strangles and is one of the attendants on glanders, sometimes running into it. It is sometimes

caused by a chronic affection of the schneiderian surfaces. It is caused sometimes by the relaxing and enlarging of the ducts communicating between the cavities of the mouth and nose by disease, allowing the semi-liquid food and its juices to pass into the nostrils. This is true chronic gleet, and the discharge is tinged with what the animal eats.

How to Know It. Discharge is not always present, neither is it uniform. sometimes during fair weather it will be discontinued. The discharge is a thick yellow mucous tinged with green, if the food be grass, or with the color of the food. If it becomes purulent, that is pus, matter, and tinged with blood, it may end in ulceration of the cartilages of the nose, and in glanders.

How to Cure. In mild cases look for decayed molar (grinding) teeth; if found, remove them. Look for swelling of the frontal bone, produced by bruises. Put the horse where he may be comfortable, let his diet be light, but soft; fresh grass in summer, with good food. Inject the nasal passages thoroughly with the following:

1 Oz. bayberry bark,
1 Pint boiling water.

When cool strain through a close linen or white flannel cloth, and inject daily.

Prepare the following:

1 Part Grains of Paradise,
1 Part white mustard seed,
1 Part powdered sulphur,
1 Part powdered charcoal.

Mix, and give one ounce daily in the food.

Or, take of alum, ½ lb.; blue vitriol, ½ lb.; grind and mix well with ½ lb. of ginger; give one large spoonful every night and morning. Keep him out of the wet and do not work him.

NASAL POLYPUS.

Polypus may form upon any of the cavaties of the body which communicate with the air, being peculiar to the mucous membrane. These grown to such size as to seriously impair breathing, are accompanied sometimes by discharge of mucus which is pure. That is, it is thrown out as soon as formed, and therefore it is not fetid. It is altogether better to call in the aid of a veterinary surgeon.

CHAPTER IV.

Diseases of the Throat, Chest and Lungs.

CHEST FOUNDER.

This when it is not soreness of the muscles from hard work, is rheumatism in its acute form. Sometimes it is caused by lesion, or straining of the muscles or the tendons connected with them.

Causes. It may be brought on by suddenly allowing the horse to become chilled after heating, giving large drafts of cold water when warm, or driving him into cold water up to his belly when heated.

How to Know It. The horse is dull; his coat may be staring; he is stiff, and moves unwillingly. Sometimes the soreness extends to the limbs; usually does from sympathy. There is fever in the parts affected and accelerated pulse, the latter from 70 to 80 beats in a minute. Also, sometimes profuse sweating and heaving at the flanks, but the legs will remain warm. The parts affected may be more or less swollen, but always tender to the touch.

What to Do. Clothe the horse warmly, and put him where he may be kept so. Wash the throat in warm salt and water. Relieve the bowels as soon as possible by an injection of soap suds, if the rectum be impacted. Give as a laxative 4 drachms of Barbados aloes, pulverized and mixed into a ball with molasses and linseed meal to form a mass, or give the following:

½ Oz. ground ginger,
1 Drachm tartar emetic,
1 Pint salt and water.

Mix and give as warm as the horse can swallow it. As a rule the horse being thoroughly physicked will get better.

BRONCHITIS.

Causes. Exposure of a heated and steaming horse to chill or over exertion,

and leaving the horse in the stable, when the system is quite relaxed. Riding to town and leaving a horse in the cold wind while the owner is making himself comfortable. There is first a cold, enlarged glands and swelled throat. The inflammation extends down from the larynx through the trachea into the bronchial tubes and air passages of the lungs, and ends in confirmed and incurable bronchitis.

How to Know It. In the acute stage there is difficulty and rapidity of breathing, from the filling of the membranes with blood and the consequent diminishing of the size of the tube. After a time mucus is formed and increases the difficulty of breathing and causes a cough. The pulse will be 60 or 70 beats per minute; the cough will become hard and dry, and the sound in the throat will be rattling, and after the secretion of mucus a gurgling sound will be given similar to that made in blowing soap bubbles. In extreme cases the breathing becomes extremely laborious, the cough is constant and distressing, the legs are extended, and at length the animal dies of suffocation.

What to do. The first step is to find the extent of the inflammation. Clothe the animal warmly and give an injection of warm water to relieve the bowels. Avoid all strong purgatives. In fact, give none unless the bowels are decidedly bound up. Let the food be soft and laxative, green grass in summer, or mashes and gruels in winter. For the throat, scalded soft hay, fastened by means of the eight tailed bandages, will be good. Wash the neck and chest with a weak decoction of tobacco as hot as it can be borne. When dry, shave the hair from the chest and apply a blister of better strength than that advised for chest founder. The following will be good:

1 Oz. powdered cantharides,
1 Oz. powdered resin,
4 Oz. lard oil.

Melt the resin and lard together, with just sufficient heat to melt the resin. Add the cantharides and stir until it sets together. Apply to the chest and throat if the case is desperate. If only irritation is desired the following will be good:

4 Ounces lard oil,
1 Ounce turpentine,
6 Drachms powdered cantharides.

Shave the hair and apply by rubbing in.

For the body prepare a strong cloth as shown on preceding page. Get two pieces of flannel three yards long and the full width of the fabric, also four pieces half a yard long and a foot wide. Saturate one of the pieces with cold

water, fold, and apply near the top of the back, equally on each side. Two of the smaller pieces are to be saturated with water and laid along the sides of the chest, fasten the jacket at the back so as to hold all snug. When the flannels are warm remove them and replace immediately with others. So continue for two or three hours as the case may be, and then allow them to remain until the animal is pretty well recovered.

In very aggravated cases of congestion give every half hour until the pulse regains its tone, and then at longer intervals, reduced at last to once a day, the following:

1 Ounce sulphuric ether,
1 Ounce laudanum,
1 Pint water,

At the third dose discontinue if the effect required is not produced and give the following:

½ Ounce of aconite,
½ Drachm of extract of belladonna.

Rub down the belladonna with an ounce of water. Mix. Give this every hour until the pulse is better, then withdraw the aconite and half the laudanum, and add half a drachm of belladonna to the drink first recommended. Let the food be thick gruel of oatmeal, boiled potatoes, and oatmeal and bran mashes. Give no dry, and especially no dirty food. When the animal begins to recover so as to eat whole grain, grass and hay, let them be especially freed from dust, and let them be given moistened, until the horse be perfectly recovered.

PNEUMONIA, OR INFLAMMATION OF THE LUNGS.

This may follow acute congestion of the lungs, this being really its first stage, though often not noticed, by the ordinary observer, as such. But congestion may occur in its sudden and fatal form from overtaxing a fat horse, or one otherwise out of condition. Suppose from hard driving or hard riding, he hangs heavily on the bit; droops and staggers. If not pulled up he may fall; or getting to the stable he stands with dilated nostrils, extended head, quick, convulsive or labored breathing, eyes staring and bloodshot, his nasal membrane deep red or blue, and pulse rapid and weak; if in putting the ear to the chest there is a loud respiratory murmur with crepitation (a peculiar slight cracking sound); if the heart, as felt behind the left elbow, is beating tumultuously; if the limbs are cold, with perspiration breaking out on different parts of the body, there is no time to lose.

Remove everything from the animal that may impede breathing, and allow him plenty of fresh air. Give an active stimulant, the easiest to be had; whisky, four or five ounces, or a tumblerfull in a half pint of water. If this cannot be had give an ounce of ground ginger in a pint of water. Give also warm water injections to relieve the bowels, and also while the body is enveloped in blankets wrung out of hot water, and covered with dry ones. If the patient does not soon recover under this treatment the case will be one of pneumonia.

How to Know It. If the disease does not succeed to the symptoms we have just described, those of acute congestion, there will be a chill with shivering, and generally a dry cough, but deep as though from the chest. There will be a hot skin, indicating fever, quick, labored breathing, a full but oppressed pulse. The membranes of the eyes, nose and mouth will be red, and as the disease advances, a yellowish or whitish matter will come from the nostrils. The horse will always stand with the legs wide apart; so will the ox in bad cases, and the latter will moan with each expiration of the breath. Generally the ox will lie down. There will be crepitation of the lungs about the seat of the disease, and a more than normal murmur upon applying the ear. By percussion, striking the affected parts, there will be flinching and even groaning, but except at the seat of the disease the chest will retain its healthy sound, while the diseased parts will sound dull and solid. Thus, by the ear, and sounding by the hand, the progress of the solidification of the lungs may be followed from day to day.

What to Do. Place the animal in a loose box stall, with plenty of ventilation to the stable. If the bowels are costive, loosen them by injections of warm water. Bandage the limbs to keep them warm, and give the body such clothing as the necessities of the case seem to require. Let the food be simple, laxative and cooling. Bran mashes, boiled carrots, linseed meal, soft sweet hay. Do not check diarrhoea or profuse stooling; it is an effect of nature to relieve the system. If there is fever, give plenty of water. If there is swift pulse and oppression of the lungs, give 20 to 30 drops of tincture of aconite in half a pint of water, or 1 to 2 drachms of tincture of veratrum in water every two hours. If, under this treatment, the system becomes depressed, and it must be watched, discontinue. If the pulse falls—if there is trembling sweats, and a peculiar anxious expression in the eyes, discontinue. If there is great exhaustion, give moderate doses of whisky, but discontinue it unless good effects are seen. If there is much weakness, give 2 drachms each of camphor and of carbonate of ammonia, made into a ball with molasses and linseed meal, twice a day. In the case of considerable congestion, strong mustard poultices will be indicated, to be applied to the chest.

In the case of cattle, the same general treatment should be followed. Double the quantity of aconite and ammonia should be given. As a rule, cattle

require more than the horse; and in giving medicine to cattle it must trickle down the throat, in order that it may not pass into the first stomach.

In this disease symptoms must be watched. Good nursing is of especial value, and as the animal begins to recover give soft and easily digestible food, and assist the system if necessary with wine, ale or whisky in very light doses.

PLEURISY.

This is an inflammation of the membrane of the lining of the chest and covering of the lungs. It is common to all domestic animals, in exposed situations and those liable to rheumatism. The pleura is one of the serous membranes, those lining closed cavities, as the chest, abdomen and joints. In health they are insensible to us, but under the effects of inflammation the most sensitive and painful possible. Since every inspiration and expiration of the breath moves these membranous linings upon each other, we can see at once the extreme anguish it must occasion. If relief is not soon obtained the disease quickly ends in death.

How to Know. There will be some alternations of shivering followed by heat of the skin, sometimes extending to the limbs. There will be localized sweating and congestion of the muscles. If confined to one side the foot of that side will be extended. The animal will look at the flank, lie down, rise again, and there will be general uneasiness indicative of pain. The pulse will be quick and hard, seeming to strike the finger under the compression. There will be inclination to cough, but which the animal will fear to exercise. The cough is not always present, but when so, is always suppressed, short and hacking. The breathing will be hurried, but apparently confined to the abdominal muscles, the inspiration short and checked, but the expiration slow and prolonged. In pneumonia and bronchitis there is often intense redness of the nose, in pleurisy less. There is no nasal discharge and the heat of the breath is not so great as in pneumonia. After effusion of serum (fluid matter or water) into the cavity of the chest ensues, which may be in 24 or 36 hours, the pulse becomes soft, and the animal seems better. If the effusion is re-absorbed the animal will recover. If not, the pulse loses its full tone, and again becomes hard and quick. The breathing is again difficult and attended with lifting of the flank and loin. The nose and head is extended, the nostrils are dilated, with signs of suffocation. The pulse at length becomes weak, thrilling at each beat until at length the animals wavers, staggers, falls and dies.

An attack of pleurisy is often taken by those unacquainted with the disease for spasmodic colic. This error, if made, will probably be fatal to the animal affected. In colic the pulse is natural at the commencement, and the paroxysms of pain are of short duration. In pleurisy the artery is thin, the pulsations

seem to strike the fingers, but the stroke is short. The pain is continuous, the body hot, but the feet generally cold.

What to Do. The same general care as in bronchitis and inflammation of the lungs is to be observed. If there is a chill, wrap the horse completely in blankets wrung out of hot water, and cover with dry ones. When removed, do so a little at a time, rubbing dry, and re-clothe warmly. If taken in its earliest stage, give:

½ Ounce laudunum,
½ Pint linseed oil.

This will often prove effective; if not, repeat the dose in a few hours. For an ox, give double this dose. If the symptoms increase, apply a strong mustard poultice to the side of the chest, or a blister. The bowels should be kept moderately open. If effusion of water takes place, give 6 drachms of acetate of potassa once or twice a day in a pail of water. The following will be found excellent in place of the last named remedy, if there is weakness and a rapid pulse (70 to 80), and scanty urine:

½ Ounce tincture of chloride of iron,
¾ pail water,

Give as a drink twice daily.

The effusion of water not yielding, the chest may be tapped with a trochar. Divide the skin with a lancet between the eighth and ninth ribs and near the lower end. Be careful the air does not enter. Draw off only a part of the water if it produces a shock. In this, one should have the advice of a veterinarian. Repeat in 24 to 48 hours. The animal should be kept up with sulphate of iron, 2 drachms, twice a day, in water, with stimulants and easily digestible and nutritious food.

It is absolutely necessary, after effusion of water has taken place, that the urine should be passed freely to assist absorption. To this end the following will be indicated:

1 Drachm iodide of potassium,
1 Drachm carbonate of ammonia,
½ Ounce powdered gentain.

Give twice a day as a drench in a quart of water, or as a ball mixed with linseed meal and molasses.

COLDS.

Colds in horses, as in the human family, are usually the result of improper

care or undue exposure. Taking a horse from a hot, illy-ventilated stable, and allowing him after driving to become cold, is one prolific cause of colds. There are so many means of causing this disability that it would be impossible to enumerate them. If the attack is light, all that will be necessary will be to clothe the animal warmly and relax the bowels with a warm mash, and give rest for a few days.

Sometimes, however, the attack is prolonged and severe. The appetite ceases, the coat roughens, parts of the body are hot and others cold, the membrane of the nose at first dry and pale, with the facial sinuses clogged, at length terminates in a discharge more or less great, without improving the health of the horse.

What to Do. Keep the animal warmly clothed, in ample box stall, with plenty of bedding. If the cold does not give way in a few days after the first attack, and the symptoms are as we have indicated, or if the membranes of the nose are dry, make a sack of coarse gunny cloth, large enough so it may fit the nose properly, but enlarging to the bottom, and two feet or more long, with a slit covered with a coarse pine sawdust with which half an ounce of spirits of turpentine has been thoroughly mixed. Place the bag on the nose.

Turn two gallons of hot water in the slit, and every twenty minutes repeat, allowing the bag to remain on an hour each time. Use this six times a day until the discharge begins. When water runs freely from the nose, three times daily will be enough. Let the food be good scalded oats or other like food, with mashes if the bowels are constipated.

An animal with this kind of a cold should not be put to steady work until entirely recovered. The result of protracted cold is great weakness, and work before recovery often leads to disease of the air passages and lungs. If there is much fever give the following:

? Drachms spirits of ammonia,
2 Drachms ether.

Mix and give in a little gruel, (say ½ pint), twice a day. If the throat is involved, poultice it with linseed meal in which a little mustard has been mixed. When the symptoms give way and improvement begins, or if the appetite is not good prepare the following:

2 Ounces powdered gentain,
2 Ounces carbonate of ammonia.

Form this into a mass, with linseed oil and molasses, divided into eight parts and give one twice each day. If the cold becomes chronic it ends in catarrh. When there are catarrhal symptoms and sore throat, give the following:

1 Drachm extract of belladonna,
2 Drachms ipecac,
2 Drachms powdered camphor,
4 Drachms niter.

Mix into a ball with linseed oil, and give one every three or four hours. In inveterate or chronic cold there is discharge, and swelling of the lymphatic gland. We have already shown how glanders may be known.

In case the horse gets cold, it is better that he be examined by a competent veterinary surgeon, in order to be sure the disease is not glanders.

ENLARGED GLANDS—GOITRE.

There are various glands in the throat that are subject to enlargement from disease, and which remain permanent after the disease is passed. This result is generally more unsightly as a blemish than as a real disability. Goitre, however, is a disease peculiar to some limestone regions, producing in animals, as in man, a swelling of the thyroid gland. In some portions of the east, it is quite previlent, producing extensive enlargements in lambs. It also attacks cattle and swine. In solid-hoofed animals, as in the horse, there may be a swelling on either side;in others it is in the center just below the roots of the jaws. For all enlargements of the glands, tincture of iodine will disperse the swelling if it may be possible. In bronchocele or goitre, rainwater only should be given to drink; iodine in doses of ten grains daily may be given on an empty stomach, and the swelling may be painted with the tincture. This to be persisted in for months. Another remedy that has been successful, is the following:

½ Drachm iodide of potassium,
1 Drachm liquor potassae,
½ Pint rainwater.

Mix, and give as a dose night and morning, using the tincture of iodine on the goitre.

SWELLED THROAT, OR LARYNGITIS.

Causes. Foul stables or any cause producing colds, catarrh, etc.

How to Know It. The animal is dull. The head is carried in a peculiar manner, as though the neck were stiff. There is a short, frequent cough, the breath is hurried, the pulse full and throbbing, and the membranes of the nasal passages are high colored, almost scarlet. There will be a hoarse sound, approaching to a grunt, at each breath taken, if the ears are held against the animal's windpipe. Externally there is more or less enlargement over the region

of the larynx, the enlargement of the windpipe next the throat. Handling the throat seems to produce extreme pain.

What to Do. Reduce the pulse at once by doses of tincture of aconite in a wine glass full of water, repeated every half hour. Place the steaming-bag on the nose, as recommended for colds. Keep it employed almost constantly for there may be danger of strangulation. If the steaming seems to distress the animal, omit it, or use it only occasionally, and soak soft hay in boiling water and apply to the throat as hot as can be borne. Bandage and fasten with the eight-tailed bandage previously described. Or, ferment the throat with cloths wrung out of hot mustard water. If there is difficulty in swallowing, put a tea-spoonful of the following well back on the tongue several times a day:

1 Ounce powdered guaiacum,
4 Ounces powdered chlorate of potash,
½ Pint of molasses.

Do not in administering anything, force the jaws wide apart. Act as gently as possible. If the animal is feverish and the throat hot and dry, give three times a day, in a pint of cold linseed tea, the following:

1 Drachm powdered ipecac,
1 Ounce solution of acetate of ammonia.

In case the disease becomes chronic, the following excitant to the throat will be indicated:

1 Part oil of turpentine,
1 Part solution of ammonia,
1 Part olive oil.

Mix, shake the bottle before using, and rub well in on the throat every day.

CHRONIC COUGH.

There are many cases of long standing or chronic cough. Cough is an attendant upon so many disorders of the air passages, from the most trivial difficulty in teething to glanders, that a cough should not be overlooked in the diagnosis of diseases. And so many diseases leave the patient with a chronic cough, that its symptomatic stages should be carefully observed.

Coughing tends generally to a thickening of the membranes. When the membrane covering the larynx becomes thickened, and consequently morbidly sensitive, the cough becomes fixed or what is termed chronic.

The sense of smell in the nose is peculiarly acute, and the membranes of the nose and throat, as a matter of course, are fully as sensitive. We have said, "the limbs and feet are half the horse; the lungs the test of his endurance." Yet nine in ten of the stables in which horses are kept are offensive to man and irritate the air passages when first entered. Yet the sense of smell in man is

not very acute, except in a few directions. A stable therefore, offensive to man is not a fit place for horses to be kept, where the lungs constitute one of the principal excellencies of the animal.

The cough which accompanies the several diseases of which this volume treats, will be described in the treatment of the diseases themselves. In this article chronic cough will be treated, the cough that is always present in eating, drinking and inhaling a cold draught of air, or from any cause of excitement, requiring long and careful nursing for their cure. The chronic cough, resulting from colds, is hard and metallic. For this, the following will be good, to be rubbed on the throat and around the windpipe, once in ten days:

15 Drops croton oil,
1 Ounce glycerine,

Give twice a day, for a week, the following:

40 Drops diluted prussic acid,
1 Ounce niter,
1 Ounce bicarbonate of soda,
1 Quart water.

If this does not give relief, the following, valuable for irritable chronic cough, the result of influenza or sore throat, may be used:

1 Ounce Fowler's solution of arsenic,
1 Ounce chlorate of potash,
1 Drachm belladonna.

Give once a day in water or gruel and note results, ceasing after a week or ten days, if no improvement ensues. For cough and sore throat, when first discovered, take:

1 Drachm powdered camphor,
1 Drachm extract belladonna,
2 Ounces sweet spirits niter.

Give in a pint of cold gruel three times a day. Tar-water is well known to be valuable in obstinate coughs. Give every morning as a drink, the following:

1 Drachm powdered squills,
½ Pint tar-water,
½ Pint lime-water.

BROKEN WIND; BELLOWS; HEAVES.

Causes. Broken wind is the result both of disease of the lungs and violent

exertions. Feeding on dusty hay and grain are prolific sources of the disease. Where no clover hay is used, the disease is rare. It is mainly confined to horses that have arrived at maturity. A horse fed for days and weeks on dusty hay, and then driven hard, will exhibit heaves, unless his lungs and digestion are extraordinary. This disease is usually known in the South under the name of bellows, and in the North as heaves, either of them expressive of the disease.

How to Know It. Broken wind is nearly allied to asthma in man but is more continuous in its action and less liable to occur in paroxysms. At each breath there will be a two-fold motion of the flank, caused by a falling in of the abdominal walls, causing the flank to lift, then after a perceptible interval, a rising of the back part of the belly assists in freeing the lungs of air. There is a short, dry cough, sometimes almost inaudible, following by whirring.

What to Do. There is no permanent cure for this disability. The symptoms and distress may be alleviated by giving only sound grain and bright, hard hay, free from dust. Prairie hay with plenty of resin leaf in it is best; next, clean cured cornstalks. But little water should be allowed at a time and not more than 6 to 8 pounds of hay, daily, and this given at night, the provender being confined as much as possible to grain and grass in summer, and grain, bran-mashes and carrots or potatoes in winter.

This will enable many broken-winded horses to do a fair amount of work with comparative comfort. In any event, a horse inclined to be thick-winded in any degree, should never be tightly checked up, nor above all, be driven by pulling in the head, causing undue bearing either of the curb or snaffle on the jaw.

The animal should be allowed to hold its head in the easiest position, since its work must be necessarily slow.

A still farther alleviation may be obtained from the use of balsam of fir and balsam of copabia, 4 Ozs. each; and mix with calcined magnesia sufficiently thick to make it into balls; give a middling sized ball night and morning for a week or ten days. Or take calcined magnesia, balsam of fir, and balsam of copabia, of each 1 Oz., spirits of turpentine, 2 Ozs., and put them all into 1 pint of the best vinegar, and give for a dose 1 tablespoon in his feed once a day, for a week; then every other for 2 or 3 months.

INFLUENZA.

This epizootic, which first and last has been prevalent in nearly all countries where the horse is used, is, as to its origin, but little understood. Its symptons, however, are well known, but these may be complicated by inflammatory symptoms of all the air passages; also by rheumatic swellings, delirium and inflammation of the eyes.

How to Know It. The attack may be sudden. There will be stupor and weakness, the head will be held low, the eyes dull and half closed, the gait will be weak, with cracking of the joints sometimes. There will be no appetite, and fever; the mouth hot and clammy, the bowels costive, with scanty urine; the pulse quick and weak, but sometimes hard; the membrane of the nose may be pink, or a deep leaden hue; the cough will be deep and harsh; the coat rough and staring; the skin tender and sometimes trembling, and the ears and limbs alternately hot and cold. Upon applying the ear to the lungs crepitation will be heard, or sometimes a harsh blowing sound. As the disease progresses, and the nose discharges a white, yellowish or greenish water, the animal may get better; but when the lungs are seriously involved, the symptoms will increase. As a rule there is constipation, although purging is sometimes present.

What to Do. Place the animal in a well littered stall, free from drafts of air. Do not depend upon strong physic. The cure must be effected by watching the symptoms and combating them. If there is costiveness keep the bowels open by injections of two wine glasses full of linseed oil. Relief must be had by means of stimulants and tonics. Good nursing must be constant, with clothing enough to keep the animal warm. A good tonic and stimulant is:

2 Oz. of gentain,
2 Oz. carbonate ammonia.

Form in eight doses and give one night and morning. If the cough is distressing prepare the following:

½ Oz. extract belladonna,
2 Drachms powdered opium,
3 Drachms camphor,
2 Oz. liquorice,
½ Pint molasses.

Mix thoroughly and spread a tablespoonful on the tongue twice a day. If with the cough there is a sore throat and catarrh, prepare the following:

20 grains iodine,
1 Drachm iodide of potassium,
2 Ounces sweet spirits of niter,
1 Pint water and gruel.

Give this as a dose twice a day. If the animal should begin to improve it will be about the fifth day.

CHAPTER V.

Diseases of the Stomach and Bowels.

SOUR STOMACH.

Animals living upon vegetable food, where the mastication or the grinding down of the substances taken into the mouth is imperfectly accomplished, or where a greedy animal is allowed to overload the stomach with food, since it is thus imperfectly moistened with saliva, are subject to acidity of the stomach, fermentation of the food, and the diseases attendant thereupon. Carbonic acid gas is evolved, and if not checked in time will sometimes cause violent and extreme distension and inflammation of the stomach, the result of decomposition, or spasmodic colic, with paroxysms of extreme agony, and sometimes the most violent rupture of the stomach ending in death.

We often see violent distension of the stomach in cattle when turned into a field of flush clover when hungry; the remedy in this case is thrusting a trochar or knife into the stomach to allow the escape of the gases. When in the horse, inflammatory action has been set up it may lead to many diseases, each of which must be treated according to the symptoms exhibited.

In the first stage or that of simple acidity of the stomach, if taken in time, treatment is comparatively easy. It is called sour stomach, acute gastritis, indigestion, tympany, etc.

Causes. Suspended digestion and consequent fermentation from overloading the stomach with improperly chewed food. This will never occur in slow feeders that fully grind and saturate the food with saliva, since in this case the appetite is fully satisfied before overloading ensues. Colic may occur by giving large draughts of water immediately after feeding, thus washing forward the food beyond the stomach. Sour stomach may also ensue from indigestible and easily fermented food, and inflammation from eating plants that irritate the stomach.

How to Know It. The first symptoms are sour stomach, simple colic, or

fermentation. There is fullness, causing undue distension; then quickened, deep but oppressed breathing; the animal is dull and stupid; there is increasing pain, and at length, if relief is not obtained, more violent symptoms set in.

What to Do. Give immediately one or two ounces of magnesia. Evacuate the bowels by means of injections of warm water. Rub the belly with considerable friction one way, from the forelegs back. If there is griping give the following:

15 to 20 Drops oil of peppermint,
1 Ounce of laudanum.

If the weather is cold, blanket and walk the horse to assist in giving relief.

In the case of the ox, give double the dose mentioned; sheep one-quarter to one-third the dose for the horse, except of laudunum, of which give the sheep 2 to 3 drachms.

COLIC.

This may be of two kinds, spasmodic, or flatulent colic. The first is the result of cramps or spasmodic contractions, causing severe pain with tendency to inflammation. The other of distension of the bowels with tendency to inflammation and rupture of the coats.

How to Know Spasmodic Colic. There will be spasms of pain, with pawing, striking of the belly with the hind foot, looking around at the flanks, lying down and suddenly getting up, rolling, or lying stretched out for an instant; then suddenly rising, the horse will shake himself as the pain intermits. Again the pain returns and the same performances are gone through. There may be frequent small discharges from the bowels and bladder, and during the attacks the pulse and breathing are accelerated.

What to Do. Relieve the pain by means of an opiate, and cause movement of the bowels. To do this in mild cases the following will be good in connection with injections of warm water.

½ Ounce of laudanum,
4 to 5 Drachms aloes,
1 Pint hot water.

Pulverize the aloes and dissolve in hot water. Cool as quickly as possible and add the laudunum, and give as a dose. If there is abundant formation of gas, give the following promptly:

4 Drachms aloes,
1 Ounce sulphuric ether,
1 Ounce laudanum.

To mix, pulverize the aloes in a pint and half of hot water; cool, add the other ingredients and give immediately.

The symptoms in cattle are uneasiness, shuffling of the hind legs when standing. When lying down they will kick with the outer limbs. There will be moaning and twisting of the tail. The same treatment is advised as for the horse, except that one pint of linseed oil should replace the aloes. Give the doses by allowing the liquid to trickle down the throat very slowly. The doses should be double that of the horse. Swine should have castor oil, one ounce, in place of the linseed oil; and sheep three-quarters of an ounce. Otherwise the doses should be about one-quarter to one-fifth those ordered for the horse.

Flatulent Colic This disease is dangerous, and is generally the result of a chronic distension of the bowels, with tendency to inflammation and rupture of the coats.

It may be the result of some other disease, or appear as a consequence of the spasmodic form; or, may be produced by the same causes as those assigned to the acute form.

How to Know It. The expression of pain is constant but not so acute. The pulse is rapid and feeble, with difficult breathing; the feet and ears are cold, the abdomen is tense and swollen, and it sounds drum-like when struck. The animal is weak and sometimes delirious. The intestines are painful (sore) as is shown by the cautious manner of lying down; if, indeed, the horse lies down at all.

What to Do. Be careful about giving purgatives. Act by injections of soapsuds and oil of turpentine; removing the contents of the impacted rectum with the well oiled hand. Give the following injection:

½ Pint oil of turpentine,
1 Quart of soapsuds.

Repeat in half an hour if necessary. If there is great distension, puncture the large intestine, or, where the sound when tapping with the knuckles is most drum-like, plunge in a trochar and allow the gas to escape through the canula. Give the following according to circumstances:

½ to 1 Ounce laudanum,
2 to 4 Ounces tincture assafoetida.

Mix in a pint of gruel.

Or use: spirits of turpentine, 3 Ozs.; laudunum, 1 Oz.; mix, and give all for a dose, by putting it into a bottle with ½ pint of warm water, which prevents

injury to the throat. If relief in not obtained in one hour, repeat the dose, adding ½ oz. of the best powdered aloes, well dissolved together.

BOTS.

When a horse is attacked with bots, it may be known by the occasional nipping at their own sides, and by red pimples or projections on the inner surface of the upper lip, which may be plainly seen by turning up the lip.

First take new milk, 2 quarts; molasses, 1 quart; and give the horse the whole amount. Second, 15 minutes afterwards give very warm sage tea, 2 quarts. Lastly, 30 minutes after the tea, you will give of currier's oil, three pints, (or enough to operate as a physic). Lard has been used, when the oil could not be obtained, with the same success.

The cure will be complete, as the milk and molasses cause the bots to let go their hold, the tea puckers them up, and the oil carries them entirely away. If you have any doubt, one trial will satisfy you perfectly. In places where the currier's oil cannot be obtained, substitute the lard, adding three or four ounces of salt with it; if no lard, dissolve a double handful of salt in warm water, three pints, and give all.

Or, make one-half gallon of sage tea, add to it one ounce of alum, drench with one-half of it, and if he is not better in thirty or forty minutes, give the balance—in six hours give a mild physic. This will never fail if given in time. Never give turpentine, as many do; it will affect the kidneys.

SPONTANEOUS SALIVATION.

Causes. This infirmity is generally the result of or symptom of some other affliction. It is often produced by something the animal has eaten. White clover will produce it. Caries and other diseases of the teeth; dentition, paralysis of the lips, ulcers of the mouth, irritating food, irritation by the bit, and especially from medicants attached to the bits of horses by ignorant stable men. It occurs as a free discharge of saliva in frothy masses or in stringy filaments, with frequent swallowing, thirst, and generally indigestion.

What to Do. Remove the cause. If the cause is from alkalies, wash the mouth with weak vinegar. If from acid, use lime water; if from caustic salts, use white of egg, or tea of slippery elm bark. If there is inflammation with costiveness, open the bowels with injections of warm water, or soapsuds, and wash the mouth frequently with alum water. If there are ulcers touch them with a feather wet with the following:

10 Grains lunar caustic,
1 Ounce distilled water.

If there are tumors with pus, lance them. If there is sloughing wash with the following:

1 Drachm solution of permanganate of potassa,
1 Pint rain water.

Give plenty of cool water, so the animal may take it at will, and feed with soft or boiled food, and if there is much swelling, keep the head tied up.

CHRONIC GASTRITIS.

Causes. Anything which impairs the digestive function may produce this disease. It is, however, in its chronic form, extremely rare. The ordinary food will be refused, and the animal will persist in eating foreign substances—old lime mortar, the wood work of the stable, earth, litter and bedding.

How to Know It. There is a dry cough; the membranes of the mouth and nostrils are dry and pale; the breath is tainted; the evacuations smell badly; the eyes are sunk, the coat dry and ragged; the horse loses condition and becomes pot bellied; the anus is lax and prominent.

What to Do. The cure will take time. Prevent the animal from indulging its unnatural appetite. The following made into a ball will be indicated:

½ Grain strychnia,
1 Drachm bichromate of ammonia,
½ Drachm extract of belladonna,
1 Drachm powdered gentain,
½ Drachm sulphate of zinc.

Give this as a ball once a day. If after continuing several days there is no improvement, give the following:

½ Ounce liquor arsenicalis,
½ Ounce tincture ipecac,
1 Ounce muriated tincture of iron,
½ Ounce laudanum,
1 Pint of water.

As the animal gets stronger give an ounce of sulphuric ether daily in a pint of water.

If the animal has simply chronic indigestion, that is, the disease does not show in the severe form we have depicted, to improve the general health the following will be indicated:

1 Ounce powdered assafoetida,
1 Ounce powdered golden seal,
2 Ounces powdered ginger,
2 Ounces powdered poplar bark,
5 Drachms powdered sulphate of iron,
1 Drachm powdered red pepper,
1 Pound of oatmeal.

Mix, divide into sixteen messes, and give one every night in the food. In addition to this the following will make a good appetizer:

1 Quart brandy,
1 Ounce salt.

Mix and give a wine glass full night and morning in gruel, just before the food. The food given must be of the very best, and that which is easily digested. Boiled oats, shorts and carrots, with sufficient good hay to distend the stomach. Keep the animal muzzled during the intervals of feeding, to prevent foul feeding. That is, eating litter or other injurious substances. If acidity of the stomach be shown, moisten the hay given, and sprinkle it freely with magnesia.

INFLAMMATION OF THE PERITONEUM.

Inflammation of the lining membrane of the abdomen is likely to occur in all domestic animals. In ruminants the right side is most affected, and the animal will stand with its feet well together.

Causes. Injuries either from rupture of the stomach or intestines, or from injuries to the abdominal walls, exposure to chill or cold, or giving an exhausted horse a wet bed to lie on.

How to Know It. There may be colic, or steady pain. This will be acute when the affected parts are pressed. There may be chill and fever alternately, and loss of appetite. The pulse will be rapid and hard, and the breath quick and catching, but when effusion takes place the breathing will be deep and easier; the pulse will soften, the belly will be pendant, and there will be fluctuations when handled, from the water contained.

What to Do. In the early stages, give full doses of laudanum; 1 to 2 ounces as may be needed, to allay pain and keep the bowels inactive. Apply mustard poultices to the abdomen, or in extreme cases the ammoniacal blister as previously described. Frequent injections of thoroughly cooked gruel may be thrown into the rectum, but until the worst symptoms are past the animal should take nothing into the stomach. As the disease progresses favorably, great care should be exercised in feeding. Oat or rye meal gruel may first be given. If these agree well, give warm soft bran-mashes, with a little oat meal added, and at length hay and sound oats.

In case absorption of the effusion of water in the cavity does not take place, which may be known by regular and ample staling, give 6 drachms potassa nitrate, daily, until the kidneys act. If tonics seem to be demanded, give daily doses of ½ drachm oxide of iron.

PARASITES WHICH INFEST THE INTESTINES.

The general symptoms for intestinal worms, in large quantity, are general ill health. The animal will lose condition; the skin will be scurfy, dry and often itching; the animal will become hide bound and pot bellied; the appetite will be irregular but voracious; there will be foetid breath, diarrhea, passing of mucus with the dung, coliky pains, swelling, itching and puffy anus, and especially the passage of the worms or their eggs will be certain proof. The horse will raise the upper lip and rub it against anything near. Colts will pick and bite the hair from the body and limbs. Intestinal worms are the tape worms, round headed and flat headed, and five species of round worms.

What to Do. Vermifuges are without number, some general in their nature, and otheers specific for particular classes. When worms are suspected, and the owner of the animal is not sure of the reality, it is safe to give a purge and watch the droppings. The following is a good vermifuge drench:

4 Drachms aloes,
1 Ounce powdered male fern,
20 Drops oil of worm seed.

Give this in a pint of warm gruel an hour before feeding in the morning.

If it be found that there are tape worms, if the horse is weak, give an ounce of areca nut fasting and follow with 4 drachms of aloes. If the animal is strong, give an ounce of oil of turpentine in an ounce of water. In four hours give another dose and follow in an hour with 4 drachms aloes. In the case of common pin worms, **(Sclerostomum Equinum)** and all worms inhabiting the bowels except the tape worm, the following vermifuge will act kindly:

1 Drachm tartar emetic,
½ Drachm powdered ginger.

Mix with enough linseed meal to form a ball, then moisten with hot water and give a dose daily for a week, before feeding. Follow with a dose of one pint of linseed oil, wait another week, and repeat as before. Then give good generous diet, with tonics daily, say 2 drachms sulphate of iron, or 4 drachms gentian in the food.

For worms lodging in the gut near the rectum, give an injection of a strong decoction of wormwood or tansey. The prevention of worms is to pay attention to the water the animal drinks, and to give sound grain and hay as food. White ash bark, burnt to ashes, and made into rather a strong lye; then mix ½ pint of it with warm water, 1 pint, and give all, 2 or 3 times daily, is highly recommended.

DIARRHOEA.

Diarrhoea is a condition of frequent watery discharges from the bowels, and

may be produced by so many causes, as irritating and indigestible food, worms, severe purgation by medicines, disorders of the liver, or constitutional tendency, that no general rule can be given. The owner of the animal must find the cause before proceeding intelligently to give relief. The most we can do is to give some general indications.

Sometimes diarrhoea is an effort of nature to rid the body of injurious matter; then the effort should be aided. Early in the effort give the horse a pint of linseed oil, or if an active purge be required, a pint of castor oil. If the diarrhoea does not cease, check it with ounce doses of laudanum and follow with tea of slippery elm bark, or linseed. If the difficulty refuse to give way, doses of 2 scruples of tannin may be given, or, doses of 3 drachms of catechu every hour until checked. The ox requires double the dose. Follow with tonics, say 4 drachms of gentian daily, or one ounce of Peruvian bark, with sound, easily digested food. If caused by bad water, throw a handful of charcoal in the water before giving it to drink. The following will be found beneficial in the several cases mentioned.

For sour and fetid discharges mix the following ingredients in the food twice or thrice daily:

1 Ounce powdered chalk,
1 Ounce bisulphate of soda.

For sour discharges with griping, take:

1 Drachm powdered opium,
1Drachm powdered chalk,
20 Drops carbolic acid.

Form into a ball with linseed meal and molasses.

If the bowels are simply in an irritable, relaxed condition, use the following:

1 Ounce powdered chalk,
1 Ounce catechu,
1 Ounce ginger,
1 Drachm opium.

Make into ball with linseed meal and molasses.

When the diarrhoea is the result of violent medical purging, try the following:

2 Ounces laudanum,
2 Ounces powdered chalk.

Mix, and give in a quart of thin starch, or flour gruel. For excessive and continued purging, give at one dose the following:

1Ounce laudanum,
1 Ounce sulphuric ether,
20 Grains tannic acid.
Mix in a pint of flax-seed tea.

Astringent injections may be given as follows:

2 Ounces laudanum,
2 Drachms acetate of lead,
1 Quart starch water.

Inject half of this and follow with the remainder in three hours, if necessary, or give at one injection the following:

4 Drachms tannic acid,
1 Pint starch water.

In case of cattle the same quantities may be used, but when given by the mouth it must be made to trickle slowly down the throat. Or try: Tormentil root, powdered. Dose: For a horse or cow, 1 to 1½ ounces. It may be stirred in 1 pint of milk and given, or it may be steeped in 1½ pints of milk, then given from 3 to 5 times daily until cured.

CHAPTER VI.

Diseases of the Liver, Urinary Organs, Etc.

YELLOW WATER.

Symptoms...The eyes run and turn yellow, the base of the mouth the same, the hair and mane get loose, and he often is lame in the right shoulder and very costive.

Give the following ball every morning until it operates upon the bowels. Take aloes, 7 drs.; calomel, 1 dr.; ginger, 4 drs.; and molasses enough to make it into a ball, wrap it in paper and give it; give scalded bran and oats, grass if it can be got; when his bowels have moved, stop the physic, and give one ounce of the spirits of camphor in ½ pint of water every morning for twelve days, give a few doses of cleansing powder. Turn him out.

Cleansing Powder. This is used when the blood is out of order—good to restore lost appetite—yellow water, and wherever it is to be used it is spoken of. Take one lb. of good ginger, 4 ounces of powdered gentain, 1 ounce of nitre, ½ ounce of crude antimony, 3 ounces of fenugreek, 3 ounces of elecampane, 5 ounces resin, mix all well, give one large spoonful every day in wet food.

INFLAMMATION OF THE KIDNEYS.

Causes. Inflammation of the kidneys, Nephritis, is produced by a variety of causes. Blows on, or sprains in the region of the loins, calculi, the excessive use of diuretics to which some stablemen are prone, musty fodder, or that which contains irritant plants, etc.

How to Know It. There will be more or less fever, sometimes a high fever; colicky pains; looking at the abdomen; the horse will lie down with extreme caution; frequent passages of urine in small quantities, but very high colored, sometimes containing blood and even pus; the legs swell uniformly from the hoofs up; the pulse is rapid, the bowels costive and the breathing excited; the

horse straddles in his gait; this, however, is a general characteristic of all diseases of the urinary organs, but in severe inflammation it amounts almost to helplessness.

There is, however, one test that is constant; there is extreme tenderness of the bony processes about six inches from the spine in the loins, pressure over the kidneys will show the terrible pain from the crouching attitude the horse assumes.

If the urine is examined under a microscope, the fibrinous casts of the kidney tubes will be found. In chronic cases, stocking of the legs casts in the urine, more or less tenderness upon pressure of the loins, and general ill health, may be all that will be observed.

What to Do. Give an active cathartic:

1 Drachm calomel,
4 Drachms powdered aloes,
Make into a ball with linseed meal and molasses.

Wrap the loins in woolen blankets and foment thoroughly with an infusion of a handful of digitalis leaves in a pail of boiling water, putting it on as warm as the hand will bear it; or wring a sheep skin out of hot water and apply the flesh side, changing as often as may be necessary.

To assist the evacuation and ease the pain give injections of linseed tea, one quart, to which an ounce of laudanum is added. Get up a good sweat if possible. This will relieve the kidneys. Keep the bowels gently open with laxatives and relieve the pains with anodynes, and as the animal improves, give bitter tonics, 3 ounces of Peruvian bark daily in three doses; or an ounce of gentain in two drachm doses three times a day.

PROFUSE STALING OR DIABETES.

This disease, called by various names, as diuresis, diabetes insipidus, poluria, etc., is simply an excessive secretion of urine, causing loss of flesh, weakness, and at length terminating in exhaustion and a general breaking down of the system.

Causes. The most common cause is dosing with quack medicines, a favorite pastime of ignorant stablemen, especially for "the water." It is also produced by musty hay and grain, new oats, distillery slops, acid diuretic plants, or any cause irritating the stomach and at the same time stimulating the kidneys.

How to Know It. There is excessive thirst, profuse and frequent staling, of pale colored urine, thin, and with little odor; loss of condition and spirits; the appetite fails; the skin is hard and dry; the hair harsh; the pulse will be weak, whether fast or slow; depraved appetite for licking noxious substances.

What to Do. Change the food at once, well seasoned hay and grain, with linseed tea given freely in the drink. The horse must not suffer from thirst, but inordinate drinking should not be allowed. Iodine is one of the chief specifics in this disease. The following will be a good formula, to be given three times a day in water:

20 Grains iodine,
1 Drachm iodide of potassium,
4 Drachms carbonate of soda.
Mix, and give in water.

Or, give daily the following:

2 Drachms phosphate of iron,
2 Drachms iodide of pottassium,
4 Drachms Peruvian bark.
Mix, and give once a day in water.

If this does not soon show a disposition to check the disease, add 15 to 20 grains of creosote daily.

Another good formula, to be given once a day, or in bad cases twice daily, is the following:

30 Grains iodine,
2 Drachms sulphate of iron,
½ Ounce powdered gentian.

Give as a ball, made with molasses and linseed meal. If four or five doses do not show decided effects discontinue. Six or seven days should effect a cure. Or, give ½ oz. of the tincture of cantharides every morning for ten or twelve days, and if not entirely well repeat it again—give clean food—the cause is rotten or musty grain, or too free use of turpentine—keep him open with mashes and green food.

THICK AND ALBUMINOUS URINE.

This disability in horses, characterized by a thick, ropy, albuminous discharge of urine, is quite common in its milder forms, being an attendant on extensive inflammation of important organs, on rheumatism, fevers, and some conditions of blood poisoning. It is especially attendant on inflammation of the kidneys, both acute and chronic, attended with degeneration and shedding of the epithelium (the layers of cells) lining the kidney tubes.

How to Know It. There are two special positions assumed by horses suf-

fering from severe secretions of albuminous urine. One is the stretched out position. In the other the back will be roached. In its mild stages the urine is thick, ropy, mucilaginous; when it first begins to flow, of a reddish-brown color, but changing to a more natural condition, ending with a whitish, milky fluid; sometimes the reverse; commencing white. When the disease is farther advanced the urine is thicker, more deeply tinged, and sometimes offensive to the sense of smell. It may degenerate into a number of forms, and finally terminate in Bright's disease of the kidneys.

What to Do. Place the animal where it may be comfortable; clothe warmly. If there is inflammation of the kidneys, foment with a sheep skin wrung out of hot water; or better, with an infusion of a handful of digitalis (Foxglove) in a pail of scalding water, and use other measures recommended in this article. If it be thought necessary to liquify the urine, not always beneficial, prepare the recipe following and exercise great care in the attendant treatment as there prescribed.

1 Ounce powdered assafoetida,
2 Ounces powdered juniper berries,
8 Ounces powdered poplar bark.

Mix, divide into eight parts, and give one night and morning in the food.

The real animus should be to remove the cause, which as we have stated is various. Attend to the general health of the animal, keep the bowels open by a free use of bran mashes and other food of an opening nature. Give laxative if necessary—say, 5 ounces salts, and Peruvian bark, 1 to 2 ounces, daily at two or three doses.

SUPPRESSION OF URINE.

Causes. Retention or suppression of urine is due to so many causes, especially in old horses, as paralysis of the bladder, meningitis, lockjaw, severe colic or other acute diseases, or from irritating drugs given by ignorant stablemen, that the operator must be informed as to the nature of the case.

What to Do. If it be caused by paralysis the urine must be drawn off several times a day with a catheter. The following will be indicated, to be given internally:

½ Drachm extract nux vomica,
1 Pint water.

Give as a drench twice a day.

Another remedy, if one has a hypodermic syringe, would be:

4 Drops sulphuric acid,
2 Grains strychnine,
½ Ounce alcohol.

Throw one-half of one grain twice daily under the skin.

If the difficulty is due to general weakness of the bladder, give the following stimulant:

20 Grains powdered cantharides,
1 Drachm powdered digitalis.

Make into a ball with soap.

If there is an accumulation of hard faeces in the rectum it must be removed by full injections of strong soap suds, and if necessary removal of the partially softened dung with the oiled hand.

If there is inflammation of the neck of the bladder, as shown by heat, swelling, tenderness, give injections of one drachm extract of belladonna in a quart of warm water, thrown repeatedly into the rectum of horses and into the vagina of mares. To relieve pain give from one-half to two drachms of opium as may be needed.

CHAPTER VII.

Diseases of the Teeth and Mouth.

APTHA.

A disease incident to sucking animals and young horses, generally occuring in the spring and fall.

How to Know It. Red patches will appear on tongue, cheeks, and lips, which assume a whitish color, caused by a fungus growth **(aedium albicans).** The lips swell; the tongue hangs out of the mouth; vesicles form containing a clear, gelatinous fluid. At length these burst; crusts form and recovery ensues.

What to Do. Give the animal soft food as recommended for other mouth diseases. Wash the mouth with the lotion prescribed for scald mouth, or prepare equal parts of honey and powdered bayberry bark into a paste, with which anoint the affected parts every night. To purify the blood and promote the general health give the following:

1 Ounce flowers of sulphur,
1 Ounce powdered sassafras bark,
2 Ounces powdered golden seal.

Mix, divide into four portions and give one every night in scalded shorts allowing it to get cold. Or give it in cold gruel as a drink. This prescription will be found valuable in any case and for all farm stock when the blood is thick and inclined to humors. Give fully grown swine half the dose prescribed, and full grown sheep one-third the dose; that is, divide into eight doses for swine and twelve for sheep.

INFLAMMATION OF THE PAROTID GLAND.

Causes. This gland becomes hot, tender and swollen in almost every case

of cold. It is liable to inflammation also from mechanical injury, and from obstruction of its duct.

How to Know It. When the gland has become swollen, it is easily discernible by sight or feeling. There is a hard and painful lump beneath the ear, with a softer feeling about its edges. The horse carries his head stiffly, chews slowly and with difficulty, and has some general fever.

What to Do. As this state of the gland is almost always preceded by cold, and is accompanied by it, the treatment must first be directed to the removal of the exciting cause. Place the animal in comfortable surroundings, attend to the state of his bowels, giving 3 ounces glaubers or epsom salts, in case of constipation, and a few warm mashes. Meanwhile, cover the affected gland with a good poultice until the inflammation is subdued.

If inflammation results from mechanical obstruction, that obstruction must of course be removed before any permanent relief can be obtained; and this may require the removal of a calculus or stone from the parotid duct, which can be safely done only by an experienced surgeon.

If attention is not directed to the swelling until matter is forming, allow it to approach the surface and come to a head before attempting to open, to avoid cutting any of the ducts, which might result in a fistula. If the tumor becomes hard, use iodine, almost to the extent of blistering.

Any wound inflicted mechanically, as a cut into the gland, or a prick with a stable fork, must be treated externally according to its nature— the main point being to close it so effectually that the salivary fluid which it is the office of this gland to secrete cannot escape through the wound.

SORE MOUTH OR TONGUE.

Canker.—Symptoms. The mouth runs water, the horse coods or throws out of his mouth. The cause of this is often from frosty bits being put into the mouth, or by eating poisonous weeds.

Cure. Take of borax, 3 drs.; sugar of lead, 2 drs.; alum, ½ oz.; vinegar, 1 pt.; sage tea, 1 pt.; shake well together, and wash the mouth out every morning—give no hay for days.

SCALD MOUTH.

Causes. The ignorant use of acid drenches or corrossive drugs by careless or ignorant stable men. Medicines of unusual strength are sent with directions for diluting. If lables were carefully read, and directions implicitly followed,

there would be less of this distressing malady, often ending in chronic disease of the stomach.

How to Know It. The mouth is red, often raw; the lips are in constant motion, moving up and down; the saliva flows continually, showing the pain the animal endures.

What to Do. Give well-made cold gruel, either of corn or oatmeal, and soft food if the horse can take it. Boiled carrots are excellent if the animal will eat them.

CHAPTER VIII.

Diseases of the Heart, Blood, Etc.

THUMPS.

Palpitation of the heart, or thumps, as it is usually called, may occur from fright, in highly fed, irregularly worked animals, but is not as a rule connected with structural disease of the heart.

Causes. Indigestion, some blood diseases, sudden excitement or fright in animals predisposed to nervousness.

How to Know It. The action of the heart will be violent and convulsive; the beatings can be seen, felt and heard. The disorder comes on abruptly, generally from excitement, has perfect intermissions with abrupt jarring thumps, and a jerking motion of the abdomen, and unaccompanied by redness of the mucous membranes; excited eyes, rapid breathing and a more or less sudden diminution of the palpitation. If signs of temporary excitement are not present; if the attack comes on slowly, is constant with aggravated intervals; if there is a heavy, prolonged, unequal beating, with red mucous membranes and swelling of the limbs, it may be inferred that the difficulty is connected with structural heart disease.

What to Do. Avoid sudden excitement and over-exertion, but give regular but gentle exercise, stimulants and tonics. The following would be indicated as a stimulant, either whisky, or ½ ounce liquid ammonia. Give 15 to 20 grains digitalis twice a day in the feed, for some weeks.

If there is a full, strong pulse, and increased size of the heart, add to the digitalis 20 drops tincture of aconite, twice a day, or drop it into the water given twice a day. If there is general debility, the following will be indicated, to be given twice a day for several weeks:

½ Drachm powdered nux vomica,
1 Drachm extract of belladonna.

Form into a ball with liquorice powder and molasses, and give.

ENLARGEMENT OF THE HEART.

Hypertrophy or enlargement of the heart is an increase of its muscular substance and may be confined to one side or ventricle. Sometimes disease of the valves leads to enlargement much beyond its usual size. Enlargement of the heart also accompanies broken wind and other impediments to the free action of the lungs and breathing tubes.

Causes. Long continued hard work; chronic indigestion, or some obstruction to the circulation.

How to Know It. There is palpitation, the beats forcible and prolonged, the intervals of silence shortened. The first sound is low, muffled and prolonged, the second loud, and if only one ventricle is affected sometimes repeated. The pulse is as a rule regular, except under excitement of the animal, and, the excitement removed, soon returns to its usual state. The breathing is often hurried, and exertion increases the general symptoms in a marked manner.

What to Do. Simple hypertrophy is seldom the cause of imminent danger. It is not unusual for horses with an enlargement of the heart to do steady, slow, moderate work, and live to be old. If there is dilation, weakness, blowing murmurs with the first heart sound, spells of oppressed and difficult breathing, if the nasal and other visible mucous membranes are livid, there is danger of sudden death at any time.

Keep the animal quiet, and at only slow, moderate labor; never over-load or put him to speed. Let the diet be of good, easily digested food; never allow the stomach to become overloaded. Give twice a day from 20 to 30 drops tincture of aconite root as the case may need. If there is broken wind or other serious impediment to breathing, 3 to 4 grains of arsenic in the food has been found useful. If the case, however, be of long standing, or due to permanent obstruction, treatment must be simply alleviation. The case will eventually end in death.

INFLAMMATION OF THE ABSORBENTS.

Inflammation of the absorbents **(Lymphangitis)**, has a variety of names, among which are Weed, and Shot of Grease, and may be a constitutional case, or a mere local affection. In its constitutional form, it is found in heavy lymphatic, fleshy-legged horses that, worked hard on heavy feed, are left in the stable for days together.

In its local form it is the result of wounds, bruises, injuries of various kinds, putrefying matter in and around the stable. It may occur from the specific poison of glanders, farcy, etc., and in the constitutional form may go on to abscess, sloughing and unhealthy sores, and death; or the horse may be left with

the limb permanently thickened. In the local form there may be abscess, diffuse suppuration, induration of the glands, and even the vessels and surrounding parts.

How to Know Constitutional Lymphangitis. There will be more or less shivering; in bad cases severe, quickened breathing; rapid, hard pulse; a general feverish state, and fever in one or both hind limbs. Enlargements may be detected high up in the groin, by the side of the sheath in the horse or udder in the mare, and great tenderness of the inguinal glands. The shivering fits will be succeeded by fever with burning sweats, swelled limbs, exudation and filling, sometimes to the body.

What to Do. In mild cases, give moderate and daily exercise, pay attention to diet, ventilation and cleanliness. If the case is more severe, give from 4 to 6 drachms of aloes, apply warm fomentations continually to the limb, with walking exercise. The bowels having been thoroughly moved, give diuretics, an ounce of saltpeter in a gallon of water two or three times daily; or 10 grains of iodine. In very bad cases, when the subject is plethoric, bleed from the jugular vein until the pulse softens, and proceed as before directed. For "thick leg," a chronic thickening of the limb, bandage from the foot up when the animal is in the stable, and apply tincture of iodine for four days, giving daily exercise; or rub the limb with iodine ointment, and give the following once a day:

½ Ounce powdered resin,
½ Ounce niter,
10 Drops oil of juniper.

Mix into a ball with liquorice powder and molasses.

If abscesses form, open them with a sharp knife, and dress with the following:

1 Ounce carbolic acid,
1 Pint distilled water.

In the local form there will be slight swelling of the cords, and redness in white skins. The lymphatic glands will be enlarged along their course, and become nodular or knotty. There will be pasty swellings of the parts, and even erysipelas.

What to Do. Give rest, and a purge of aloes as recommended for the chronic state. Wash the diseased limb with the following:

½ Drachm opium,
1Drachm acetate of lead,
1 Drachm carbolic acid,
1 Quart rainwater.

In case of excessive inflammation, poultice with flax seed or bread and milk to hasten suppuration. Open the suppurating parts to let out the matter, and dress with the carbolic solution as in the other form of the disease.

SCARLATINA.

Causes. This disease, called also scarlet fever, is not considered contagious in its milder forms, but in a malignant stage it would doubtless be as much so as the same disease in the human family. It is sometimes regarded as but a mild form of acute anasarca, and not entitled to be treated as a distinct affection; but we cannot dwell upon the niceities of classification, and where the necessities of the case (the knowledge requisite for treating certain manifestations of disease successfully) are met, it is not important that we should.

It generally follows influenza and other affections of the respiratory organs; and may be justly said to have its origin in colds and in some cases, perhaps, in the breathing of vitiated air in close, dark, ill-ventilated stables.

How to Know It. The patient exhibits great thirst, with a failing appetite, and evident weakness. He is more or less unsteady in his gait; his breath is hot and stinking, and all the limbs are swollen. But the most unmistakable signs are elevated blotches on the skin about the neck and fore limbs, and scarlet spots, of variable size, on the membranes within the nostrils.

What to Do. First, remove the animal from its fellows, for fear the disease may develop into that putrid form which is found so contagious among children, and prove infectious. Give an occasional watery bran mash to keep the bowels open and allay fever. If this is not found sufficiently laxative, give a dose of Epsom salts, or linseed oil. Guard against too active and violent purgatives. Mix three ounces liquor acetate of ammonia with three ounces of cold water, and drench with this once or twice a day, according to the violence of the fever, for three days. Meanwhile, sponge the elevated spots on the skin with a tincture of muriate of iron mixed with warm water; or, if found more convenient, put two ounces of hartshorn (aqua ammonia) into a quart of soft water, and use that.

There is a tendency in this disease to dropsical effusions, and the limbs become very much swollen even during the treatment prescribed; and by the third or fourth day a whitish mucus will begin to run slightly from both nostrils; the scarlet spots will have spread and become redder. Give now, night and morning, one-half fluid ounce sweet spirits of niter, for four or five days. Discontinue to sponge the elevated spots, but rub the limbs closely and often; and blanket the animal if necessary to keep him comfortable. The niter acts as a diuretic, and the dose and length of time it is given must be regulated by the

effect upon the kidneys. If urine is voided too often and too freely, lessen the dose, or discontinue it altogether. Follow this up with a daily dose of twenty grains of sulphate of quinine for from three to six days, and continue to rub the limbs. When there are signs of returning appetite, give him, in addition to the bran mashes, a few oats and a daily small allowance of hay; and place him in a small inclosure, where he may have such moderate exercise as he may be promoted to take. Do not fail to supply him from the first with all the pure water that he will drink.

CHAPTER IX.

Diseases of the Brain.

MAD STAGGERS.

Causes. This disease is sometimes known by the more learned term of phrenitis (the delirium of fever; frenzy, raving); but it will be by practical men most readily recognized when treated of under its old and familiar name.

It is an inflamed condition of the brain and its covering, with effusion of the small cavaties and the spaces between the membrane and the brain itself. Sometimes both the brain and its membranous covering are involved in this inflammation, sometimes but one, and that most frequently the membrane.

It may be caused by concussion of the brain by reason of blows upon the head. The brutality of a driver, which finds its gratification is using the butt of his whip upon the head of the horse, may result in a fractured skull, to be followed by slight pressure upon the brain, a speedy fever and the consequent determination of too much blood to the head, which, combined with the burning inflammation, brings on this madness, perhaps death.

Among the causes other than violence we may name the following: sudden and great changes of temperature in the body brought about by instantaneous exposure to extreme heat or cold; over-exertion in plethoric or full-blooded animals, especially in hot weather; congestion from close collar, short-drawn check, or tight throat latch, overloading stomach and bowels.

How to Know It. The symptoms often differ but little from apoplexy, comparing the first stage of each, but they may generally be distinguished by this; that in mad staggers the horse is not so cotamose, or sleepy and insensible, as in apoplexy. Light affects his eyes a little, and he is sensitive to the whip, whereas the horse laboring a genuine attack of apoplexy seems blind, deaf, and without bodily feeling. In some instances in mad staggers, it is true, the

animal may sleep till be drops, but on recovering himself he will manifest the sensitiveness above described.

Occasionally, the brain alone is involved, in which case he is stupid, dull and awkward of motion, the nerves of sensation and of motion being both affected; and during this stage he will sometimes bore his head against some object; at others he will rest his haunches upon his trough or anything else convenient.

When the membranes covering the brain are inflamed, which is most generally the case, there is restlessness rather than stupor; the horse trembles; his general temperature is elevated, while there is great heat about the upper part of the head; his pulse is excited, his breathing quick; his eyes glare; his movements are irregular; he paws, stamps, champs his teeth; an interval of stupor may occur, but even when just aroused from this condition of repose he is extremely excitable and trembles violently.

When the worst symptoms are rapidly developing themselves he begins suddenly to heave at the flanks; his eyes brighten and his nostrils expand; the pupil of the eye dilates to the utmost, and stares wildly and vacantly; his breathing becomes shorter and quicker; sometimes he will neigh uneasily; his ears are erect and bent forward; the membrane of the eye reddens and contrasts strangely with the clearness of the cornea or ball; he becomes more and more excitable, and trembles at every sound, and delirium sets in. He now dashes himself about with fury; his motions are sudden and violent, but without any disposition to mischief, as he is evidently unconscious. He sometimes becomes ferocious, and dangerous to all who may come within reach; he then bites and strikes at those who come near him; he plunges, rears upon his hind legs, whirls round and round and falls with dreadful force. He will now lie awhile exhausted, and his pulse and breathing are slower.

At length the mighty anguish returns, and he becomes again a terrifying and dangerous animal. The second paroxysm is worse than the first; he darts furiously at everything within reach; sometimes bites and tears himself; and this continues until his former stupor returns, or until he has worn himself out and death puts an end to his sufferings. Each succeeding attack increases in intensity, and brings on increased weakness, so that his periods of stupor become longer and longer till at last he dies.

In those cases where at first only the brain is involved the premonitory symptoms may continue a day or two, when the membranous coverings may become suddenly inflamed and delirium speedily set in. Whenever the membranes are attacked the disease reaches its crisis in a few hours—there must be speedy relief or death will quickly follow.

This disease may sometimes be mistaken for colic or for hydrophobia; but

to distinguish from the former, notice that in the colic the horse rises and falls with less violence and that though he sometimes plunges, he more frequently rolls about. He looks frequently at his flanks with an expression of pain, and he is all the time conscious. To distinguish it from hydrophobia, observe that while there is violence in the latter, and generally an inclination to do mischief, there is always consciousness.

What to Do. If the earlier symptoms—stupidity, sleepiness, awkward, staggery motions—are observed, apply ice cold water to the head, both by pouring and by means of a sponge or rags secured between the ears and along the forehead; give an active purge, as the bowels will almost invariably be found to be torpid and constipated. Use at first:

7 Drachms aloes,
4 Drachms castile soap,
6 Drops oil of caraways.

Mix with mucilage or syrup to form a ball, and give this quantity for one dose. If this is found, after four hours, not to have produced the desired effect, give one scruple of croton meal in water, if he will drink it; if not, he must be drenched. This is a powerful medicine; but it is of the utmost consequence that his bowels be free, and no effort must be spared to effect that object. If the croton cannot be had, resort to the clyster (of warm soap suds), or to back-raking.

The bowels having been opened, give two or three times a day the following compound, the effect of which is to decrease the action of the heart and prevent the tendency of the blood to the head, as also to promote the activity of the urinary organs:

1 Drachm digitalis,
1½ Drachms tartar emetic,
3 Drachms niter.

Keep him in a cool, airy stall, and feed with the greatest moderation giving such green and moist food as has a laxative tendency, and such quantity only, for a few days, as will prevent gnawing hunger.

BLIND STAGGERS.

Causes. This disorder, by some called megrims, by others vertigo, and by still others dizziness, is not well understood and there is a difficulty in determining whether some of the forms it assumes ought not to be set down as separate diseases. The cause, however, that will produce certain manifestations

in one horse will produce different ones in another, so that it may be readily inferred that the varying symptoms do not mark different types of disease but mere difference of degrees; and that the same general causes act throughout.

The immediate cause is clearly pressure on the brain, resulting from unusual flow of blood to the head. This is doubtless is some instances, the result of a constitutional tendency—a predisposition to epilepsy—that is brought to manifest itself on occasion of excitement, over-exertion or general ill condition of the digestive apparatus. In others it is most probably a watery suffusion of the brain—the blood being subjected to some sort of decomposition in its passage through the head and leaving the serum or watery portion, to collect there.

The immediate cause, or pressure upon the brain, is doubtless sometimes to be found in tumors, arising from blows on the head as well as in congestion, or too great fullness.

It is ordinarily regarded as an incurable disease. If there is an organic predisposition to epilepsy, entire recovery is of course out of the question; and when a horse has been once attacked, though previously free from any such tendency, he is subject to a return of the complaint because the vessels have been weakened by violence, and offer less resistance to the rapid flow of blood in the arteries, or the abnormal gathering of it in the small veins of the brain.

How to Know It. In its final manifestations it is unmistakable; but the careful and intelligent owner ought to be able to detect some symptoms of an approaching attack in time to guard against its most hurtful effects. That condition of body which superinduces congestion by internal compression and derangement is not difficult to detect, and attention to this may be the means of warding off a violent attack. This is indicated by an offensive breath; somewhat impeded respiration, or expelling of the air from the lungs; chewing food slowly, perhaps letting some of it fall from his mouth only partly masticated; a foul tongue; a dry and clammy mouth; disposition to plunge his head into the water above the nostrils when drinking; faeces (or dung) hard and difficult to pass; and urine ejected in small quantities.

The attack very seldom comes on while the horse is ridden, but while he is being rapidly driven, or after he has been subjected to a long, hot pull under a tight collar, a closely-drawn check rein, or a throat-latch buckled almost chokingly.

Occasionally the attack will be sudden and without the slightest warning; he will fall almost as though shot, or make an effort to run around and then fall; usually he will first exhibit some signs of uneasiness, as shaking the head and twitching the ears, and the eyes, if observed, will be found to have a wild, staring and bloodshot appearance. Sometimes he will stop and stare about—

look wild and irresolute—and then go on as though nothing were the matter. Again, he will rear up or stagger like a drunken man, and then fall. He often becomes stubborn, and will go only his own way—evidently unconscious—and then comes convulsions, followed by insensibility.

What to Do. When it is discovered in time that he is suffering with disordered digestion and is constipated, relieve him from work, if possible, and lessen the quantity of dry food.

Turn him out at night, at any rate, even if found imperatively necessary to have his services during the day. If he can have some continued rest, and the run of a good pasture, or else be well fed with food suitable to his condition, and well watered, while occupying a roomy, dry and well-ventilated stable, his chances for restoration to health and escaping violent attacks altogether, will be greatly increased. Of course he should have sufficient exercise, but in moderation. If the animal is young, and of full habit, yet fallen into this disordered state, restrict his diet, increase his exercise by degrees, or turn him out to pasture until his normal condition of stomach and bowels has returned.

In the beginning of this treatment as to diet—give him the following purgative:

7 Drachms aloes,
4 Drachms castile soap,
6 Drops oil of caraway.

Mix with mucilage or syrup sufficient to form a ball. This amount constitutes a dose. It may be repeated after twelve or fifteen hours if the first does not produce proper action.

But if these premonitory symptoms pass unobserved, or if it is a case of sudden attack owing to violent exercise, great heat, or development of epileptic tendencies, stop him, if driving, upon his showing any of the indications described, and go to him; examine collar, check-rein, throat-latch, and see that all is right; pat and soothe him, and allow him to stand for a few moments in quiet. Where it is found that the collar has been pressing the neck veins see that it is altered without more ado—either by cutting or by pressing in against the breast on the lower part of the collar a cloth of sufficient size to prevent its tightening upon the sides of the neck. If he recovers sufficiently to be driven, allow him to move at a very moderate pace; if not, remove him from the vehicle and lead him home. When there he must have rest and quiet, and care must be taken, as previously directed, to bring him, by food and laxatives, into a good state as to stomach and bowels.

ABSCESS WITHIN THE BRAIN.

This not unusual and terrible affection is produced almost invariably by

external injury. From being struck or striking against some hard substance, as in running away, striking the head in the stable, or other similar cause. It is possible the owner may know nothing about it. A wound, perhaps a trivial looking one, is found on the head, from which perhaps only a little watery fluid issues. Soon the horse becomes dull and from day to day gets worse, refuses his food, and at last falls, and commences knocking his head against the floor or on the ground; thus he continues until at length death comes to his relief.

There is nothing to be done once an abscess forms within the brain.

CHAPTER X.

Diseases of the Muscles and Tendons.

BLOOD SPAVIN.

This may be defined as a distention, or enlargement of the veins of the hock joint, and overlying the seat of bone and bog spavin; a local venous congestion, caused generally by swelling, impeding the flow of the blood, and often connected with bog or bone spavin. It is harmless; in fact it may be considered as accompanying, or the result of other disease of the joint.

What to Do. In the early stage cold water perseveringly applied, followed by cooling lotions, equal parts of alcohol and rain water, or one pint of brandy to one-half pint of water, applied as a lotion. If this does not relieve the difficulty, use a strong infusion of bayberry bark, using considerable friction by hand rubbing with either of the remedies named.

BOG SPAVIN.

Common bog spavin is technically an enlargement of the Bursa Mucosa, just as a distension of the sub-cutaneous (beneath the skin) veins in the region of the hock is called blood spavin. These cause an undue secretion of joint oil and a dropsical effusion into the joint, producing swelling having all the character of inflammation of the true hock joint. This inflammation of the upper or principal hock joint is true bog spavin.

Causes. Overwork, sprains, injuries either from punctured wounds, fractures or bruises; also from the effects of rheumatism. All produce inflammation of the structures of the joint.

How to Know It. In its acute form there is a tense, puffy, fluctuating swelling of the front and inside portion of the hock at the upper or principal point just where usually there is a depression. There is also a swelling behind, where thorough-pin occurs, but it can be pressed forward, the anterior (front)

swelling filling up; but there is no swelling below and behind the hock as in through-pin.

What to Do. Absolute rest and the use of a high-heeled shoe. Continued pressure on the swollen parts, by means of a truss or compress, with cold water applications, or brandy and salt.

In case there is much inflammation reduce it by means of fomentations of water and if there is pain, let the fomentations be an infusion of hops. In the later stages use tincture of arnica diluted with water.

CURB.

This is a swelling in the middle of and just behind the lowest part of the hock joint. At first it is soft and doughey, or retaining for a time the shape of the pressure, producing an anlargement about two inches below the hock. Curby hocks are also sometimes congenital and hereditary.

Causes. A blow, but more frequently a sprain of the tendon, or of the sheath through which the flexor tendon passes. The ligament of the hock when injured increases the gravity of the disease.

How to Know It. There is heat, inflammation, tenderness, lameness, and a tendency to knuckle forward at the fetlock.

What to Do. Absolute rest, a high-heeled shoe, and cold water bandages will generally remove the difficulty if applied in the early stages of the disease. If, from neglect, the lameness becomes decided, apply the following:

1 Ounce powdered bloodroot,
1 Ounce turpentine,
4 Ounces acetic acid.

lic.

Apply night and morning for a week or ten days and afterward bathe daily with vinegar.

TROROUGH-PIN.

Causes. This is a sprain of the flexor tendon behind the hock, and which has a large sheath which extends both above and below the joint—a dropsical enlargement of the sheath of the tendon, so the fluid contained may be pressed from one side to the other. Hence its name.

How to Know It. Pressure on one side will cause bulging on the other, and pressure on both sides will cause fluctuation along the tendon below and behind the hock.

What to Do. Use the same treatment as for curb. Another plan is to apply with gentle rubbing, the following ointment every day until the skin is inflamed:

1 Part biniodide of mercury,
7 Parts neats foot oil.

Rub together, either in a mortar or with a spatula on glass, until intimately incorporated, and use as directed, observing regularity and shunning violent handling.

TETANUS, OR LOCKJAW.

This terrible affection, which consists of persistent and often acutely painful drawing together (cramps) of the voluntary muscles, causing extreme rigidity, drawing together the whole muscular system, and closing or locking the jaws.

Causes. Often a wound in the leg or foot, seemingly of the most trivial character, as the prick of a nail. It is also produced by riding or driving, and leaving the animal shivering in the night air.

How to Know It. In the earliest stages there will be stiffness and rigidity of the muscles near the injury, and the limb will be moved with difficulty. There will be excitement, the ears will be pointed forward, the head elevated, the legs stiff and stretched out; the horse will seem excited and yet obstinate to move; the tail will quiver and the skin and flesh will feel hard like a board. The lower jaw being taken in the hand and the head raised, if the jaw projects over the eye, you have a case of lockjaw.

What to Do. Give the animal a loose or box stall and in the most quiet place possible, and where it will see no one except the attendant. Place slings beneath him so he can stand clear of them or rest in them at will. Remove all straw, litter or other sources of excitement, and avoid all noises or unusual movement. Keep the stable darkened and without other animals present. If the disease is produced by a wound, examine it, and if contracted or containing pus (matter) widen it, and cover with a bread and milk poultice containing laudanum or extract of belladonna.

Give a powerful purgative, as the following:

6 to 8 Drops croton oil,
4 to 6 Drachms powdered aloes.

Dissolve in a pint and a half of water and give as a drench. If it cannot be given by the mouth, administer it through the nostrils by means of a stomach pump and the horse catheter, or prepare the following, if the horse can swallow a ball:

4 Drachms powdered aloes,
4 Drachms extract of gentian,
1 Scruple croton farina.

Mix with linseed meal and molasses into a ball.

Follow this up with three doses daily of anti-spasmodics, as, one to two drachms belladonna, or one-half ounce chloral hydrate, or one-half to one ounce dose of tincture of lobelia in a pint of water. Give by the mouth if the animal can swallow; if not, as an injection. Keep the bowels open with one drachm podophyllin and two drachms extract of belladonna, smeared on the back of the tongue.

If the animal can bear it, a thorough sweat with a blanket wrung out of hot water, and covered with dry blankets will do good. Feed with nourishing gruels if the animal can swallow.

CRAMPS.

Some horses are quite subject to cramps of the muscles and tendons. It may be an irritability or spasm of a particular muscle or set of muscles, which refuse to act, becoming stiff and inflexible. They cramp and sometimes twitch excessively. This is again succeeded by another stage in which the muscles relax and are restored to their normal condition.

Causes. Strains, bruises, or over-taxation of the powers. In many cases it is undoubtedly allied to rheumatism, a disorder attacking horses much oftener than is supposed; rheumatism very often being attributed to bots, founder and various other causes by the ignorant. Both diseases are quite painful, and leave the animal very sore, and rheumatism often for months.

What to Do. Clothe the body warmly, find the seat of the difficulty by feeling of the parts until the sore place is touched. Wash the parts with salt and water, and rub dry. Then apply the following liniment:

1 Part solution of ammonia,
1 Part spirits of camphor,
1 Part olive oil.

Rub it in well, and hold a hot iron or brick to the parts to heat it thoroughly.

RHEUMATISM.

This is a peculiar form of inflammation attacking the fibrous structures of the body, such as the joints, tendons, ligaments and muscles, and is accompanied by stiffness, exceeding tenderness and pain, shifting from place to place, often implicating the valves or other structures of the heart, and when so usually results in death.

Causes. Exposure to cold, wet or drafts, especially when the system is

overworked. There is usually a constitutional predisposition in the subjects, and in such it is easily brought on by diseases of the respiratory or digestive organs, especially in horses of a full, gross habit.

How to Know It. In its acute form there is dullness, followed by extreme lameness in one or more of the limbs. There is tenderness and then swelling of the joint, tendon or muscles, at first soft, then hard. There may be fluctuations from excess of synovia (joint fluid). With the inflammation there is fever. The pulse is full and hard; the mouth is dry and clammy; there is hurried breathing, scanty urine and costiveness.

In the chronic form the symptoms are the same as in the acute, but not so pronounced, and in this form it is unattended with fever. It may appear only upon undue exposure, or in damp, lowery weather, and disappear again upon recurrence of fine weather. Chronic rheumatism is also less inclined to shift from place to place.

What to Do. For rheumatism in its early acute stage relieve the bowels by laxative medicines, say four ounces of aloes. Put the animal in slings, as for tetanus, and clothe him from the hoofs to the ears in flannel. If practicable the first thing is to fill the box in which the horse is kept with steam, keeping it up for an hour. If the pain is extreme lessen it with ounce doses of laudanum.

Give the following three or four times a day as a drench in a pint of gruel:

1 Ounce bicarbonate of soda,
1 Ounce Salicylic acid.

If this cannot be obtained, give the following, at a dose, night and morning:

½ Ounce powdered saltpeter,
1 Drachm powdered colchicum,
1 Ounce oil of turpentine,
Mix in half a pint of linseed oil.

For rheumatism in its chronic form the following will be found to be valuable, used internally:

1 Ounce powdered carbonate of potash,
1 Ounce powdered saltpeter.
2 Drachms iodide of potash.

Give in one and a half pints of water.

As a liniment for the joints and other affected parts, to be afterwards wrapped in flannel, the following is excellent:

½ Ounce laudanum,
½ Ounce camphorated oil,
1 Ounce tincture cantharides.

Apply to the joints with a soft brush, without friction.

GROGGY KNEES.

The cause of this is sprains or over-driving, or by having corks, and no toes on the shoes. This can be cured in the first stages, but if of long standing there is no cure.

What to Do. Have shoes made thick at the toe and thin at the heels; take linseed oil, ½ pint; alcohol. 4 oz.; camphor spirits, 1 oz.; laudanum, 2 ounces; shake and apply to the back part of the legs; rub it in well every four days; still increase the thickness of the shoes at the toe.

SWEENY OF THE SHOULDER.

The common effect of all lameness and disease of the limb is a wasting of the muscles connected therewith. Therefore in all sprains entailing inflammation and continued disease of a limb, and in all injuries entailing chronic, long-continued manifestations, there will be wasting or atrophy of the muscles of the cords of the limb. This is popularly called swinny or sweeny. It is the result of disease and not the disease itself. The cause of this wasting must therefore be looked after in order to obviate the difficulty.

There is, however, from sprain of the muscles outside the shoulder blade, a tendency to waste of the muscles, to such a degree sometimes, that they are so shrunken as to cause the skin to be drawn tight to the shoulder blade.

Causes. Sweeny is usually acquired by young horses, when first put to work, from over-strain; or, it may occur in horses of any age, from hard pulling on uneven ground, by stepping into holes, etc., thus causing injury to the muscles of the shoulder, and particularly those supporting the joints.

How to Know It. Sometimes the horse may be able to walk, or even trot without serious difficulty. If one stand directly in front of him there will be seen that the affected shoulder is held in an unnatural position, seeming to be rolled outward farther than is natural. There will be a peculiar motion in the gait, and heat, tenderness and swelling on the outside of the joint.

What to Do. By pressure on the parts discover the seat of the inflammation by the flinching of the animal. This found, reduce it by continued application of cold water to the part, if in the earlier stages. This may be done by

folding a long blanket and hanging over the shoulder so as to cover the affected part. Over this keep a cloth continually wet with cold water, until the acute symptoms have subsided.

After these have subsided, exercise must be given every, day either by driving on a smooth road or using at any light work on smooth ground. Every effort should be made to increase the circulation over the fallen muscles by active rubbing. If the case do not yield to treatment, and there is decided wasting, the muscle being hard, use the following:

1 Pint ammonia,
1 Quart oil.

This should be rubbed in with considerable friction, until nearly the excitement of a blister is produced. This with subsequent friction and an occasional use of the blister, will effect a cure; but it may take months of perseverance to bring the shoulder back to its perfect shape. Light exercise should be given every day.

SWEENY OF THE HIP.

The wasting of the muscles of the hip are due to analagous causes with those of the shoulder. It is, however, far more rare, since the power of the horse being in the hind-quarters, the enormous muscles of those parts act as cushions to protect the parts from injury. As a rule, the cause of the wasting of the muscles of the hip must be looked for lower down, unless the injury is known to proceed from a fall on the side.

A careful examination of all the muscles will enable the owner pretty generally to fix the seat of the disease, from the heat and tenderness of the parts. This discovered, use the means prescribed for shoulder sweeny. In old and difficult cases, either of the shoulder or hip, it may be necessary to resort to active blistering and subsequent stimulation by means of the galvanic battery. In old and confirmed sweeny that has come with a horse bought, or from neglect at the proper time, a cure will probably not be effected; but a partial restoration of the parts may be made.

The following is recommended: alcohol and spirits of turpentine, of each. 8 ozs.; camphor gum, pulverized cantharides, and capsicum, of each, 1 oz., oil of spike, 3 ozs. Mix.

Sweeny has been placed among the diseases of the bones because it sometimes proceeds from injury to the bones and joints. The difficulty itself, however, is confined to the muscles.

BONE SPAVIN.

The definition of bone spavin may be given as an inflammation, ulceration and bony deposit of the small flat bones in the lower and inner part of the hock joint; or of both the outer and inner ones, or from inflammation of the cuniform and metatarsal bones, terminating in anchylosis (a bony union of the parts) rendering the joint stiff.

Causes. Injury to the joint by concussion, sprains of the ligaments, the use of shoes with high heels or calks.

Bone spavin is really one of the most formidable diseases with which the horseman has to deal, and the attack is sometimes so slow and blind that jockeys are often enabled to put off a spavined horse on the unwary, the horse afterwards going dead lame. Nevertheless it will show itself if the horse is allowed to cool, or is ridden into the water and allowed to stand awhile.

How to Know It. Sprains do not invariably cause lameness. There may be little or no local swelling as in occult spavin, as ulceration is called, in the center of the joint between the flat bones. The swelling, when it does exist, is in front and on the inside and on the lower part of the joint, and may best be seen by standing about midway of the body so as to get a side view of the front of the hock. When the swelling is in front of the hock it is most to be feared. The animal if turned from side to side in the stall will move stiff and on the toe. This same stiffness is also seen when the animal first starts off, but which may nearly or quite disappear when the animal becomes warm. The horse will sometimes jerk up the limb as though he had string-halt. By turning him quickly in a small circle he will carry the limb more or less stiff, or rest on the toe only.

What to Do. In any case, rest and a high heeled shoe should be allowed. In the acute stage or early in the development of the disease, place the horse in slings if possible. Foment thoroughly with hot water in which an ounce of laudanum is mixed to each two quarts of water. Give four drachms of aloes if the bowels are costive, and give half an ounce to an ounce of saltpeter in the water, morning and night, until a free flow of urine is had. When the inflammation has subsided, blister. The following will be effectual:

2 Drachms oil of rosemary,
½ Ounce powdered cantharides,
4 Ounces mercurial ointment.

Grind thoroughly together and rub on, heating it in with a warm iron. The following are also good: Oil of spike, organum, cedar, British and spirits of turpentine, of each, 1 oz., Spanish flies, pulverized, ½ oz. Apply once in six to nine days only—remove the lump of spavins splints, curbs, if of recent occurrence.

CHAPTER XI.

Diseases of the Eye.

NATURALLY WEAK EYES.

Very many persons, otherwise well informed, when from any cause the eyes of horses become weak, inflamed, watery, or drop tears, suppose the cause to be from a natural weakness of the sight. So "blind teeth" are supposed to cause serious trouble, and even blindness in horses. Nothing could be further from the truth. It is exceedingly rare that horses have naturally weak eyes; it can almost always be traced to some local cause. Thus, watering of the eyes is caused by a stoppage of the lachrymal ducts leading from the eyes into the nostrils, the natural channels for carrying off the superabundant moisture of the eye. Inflammation of the eyes is not uncommon from a turning in of the eye-lashes. The remedy is to snip them off with the scissors.

"Blind teeth," or "wolf teeth," as the immature supernumarary tushes are called, do no injury whatever. If it is feared they may, it is easy to take them out with a pair of forceps.

Colts are often subjected to inflammation of the eyes in a slight degree, during teething. Examine the teeth, lance the gums, and the eyes will recover. It is a case of sympathy.

SORE EYE-LIDS.

In the outset of more serious disease, soreness of the lids of the eyes is common. It is also produced by irritation of various kinds. In inflammation of the eyes, soreness of the lids is always present. If from other diseases, it is sympathetic, and will pass away with the disease itself.

There is one form, however, that is characterized by a redness, swelling and itching, the edges becoming raw and exuding matter. This must have specific treatment.

What to Do. The horse should have a laxative dose if the bowels are not in a natural state. The following will be indicated:

1 Drachm flowers of sulphur,
2 Drachms powdered mandrake,
3 Drachms powdered aloes.

Form into a ball with honey, and give as a dose.

To reduce the inflammation, make a curd, by heating three eggs thoroughly and then stirring them with a quart of filtered rainwater until mixed; let it come to a boil, stirring occasionally. Add half an ounce of sulphate of zinc, and continue the boiling for a few minutes. Bind the curd over the eyes, by placing a portion between layers of thin muslin.

During the whole treatment the horse must be tied up by two lines to the rear posts of the stall, so he cannot rub the eyes, and must be fed from a nose-bag.

MOON-EYES.

This is ophthalmy, recurring at periodic times, or at intervals of three weeks, a month or more, and not, as is often supposed, at the full moon.

Causes. Hereditary predisposition; from malarial causes; herding in low, damp situations; rheumatic affections; irritation consequent on teething, and, in fact, where predisposition occurs, from any cause tending to lower the general state of the health.

How to Know It. There will be a sunken look to the eye; the haw of the eye will protrude; the white of the eye may be of a pinkish cast; the eye will be watery; the pupil of the eye will be cloudy, at the edges, and dull and discolored at the center; there will be haziness, milkiness, or a whitish spot may appear, which will continue to overcast the eye. In the intervals between the attacks the transparent coat of the eye will have a hazy, bluish cast about its border, and the iris will lack its natural brightness; the upper lid or eyebrow will be wrinkled or furrowed.

What to Do. Look first of all for carious or defective teeth, and if found extract them. There is a strong sympathy between any difficulty with the teeth and the eyes, though unsound or "wolf teeth" do not, as was once supposed, cause blindness.

Place the animal in a darkened stable; give four drachms aloes, and apply the following lotion twice a day:

20 Grains acetate of lead,
20 Drops belladonna,
1 Quart filtered rainwater.

Alternate this twice a day with the following:

20 Grains sulphate of zinc,
20 Drops tincture of Malabar bean,
1 Quart filtered rainwater.

The physic having acted, give two or three times a day the following:

1 Drachm sulphate of iron,
½ Ounce powdered Peruvian bark.

Mix in one quart of warm water, or give in the feed if the horse will eat it. When another attack is expected double this dose.

If, however, the attacks recur, and at lessened periods, the trouble may be expected to end in cataract and blindness.

CATARACT.

As a rule, cataract is the result of inflammation of the deep structures of the eyeball (internal ophthalmy or the periodic form). It also occurs occasionally from diabetes and other constitutional disabilities.

How to Know It. Put the horse in a dark place. Take a lighted candle. Three images will be reflected, one from the surface of the eye, one from the front surface of the lens, and one from the rear surface of the lens. If in moving the light either of the posterior images are changed into a white haze, there is exudation into that part of the lens; in other words, a cataract is forming.

What to Do. Unless the cataract is only just forming the horse will be eventually blind. Give aloes as recommended for moon-blindness, and also the prescription for lotions in that case. Follow this up with digitalis in doses of fifteen to twenty grains daily, alternated daily with six to eight drachms of niter in the water taken. Keep the animal in a dark room.

Apply to the eye daily for several months the following:

2 Grains phosphorus,
1 Ounce almond oil.

Mix and keep in a dark, cool place, in a bottle with a ground glass stopper.

ENLARGEMENT OF THE HOCK.

Nature has protected the hocks in most ample manner, to prevent injury under ordinary circumstances, and in fact, under exceptional circumstances, except those of an accidental or violent nature. From various bruises or strains, inflammation and lameness may ensue. Rest and fomentations will generally set this right if taken early. Sometimes, however, the enlargement will continue to grow in spite of all efforts to the contrary, and until the entire joint is involved.

How to Know It. There are two forms of this disease. In one, the ten-

dons and cartilages only are affected. This will generally yield to fomentations and a few applications of oleate of mercury. Another form is more serious. From a severe blow or other cause, there is a bruise of the bone, by which the investing membrane, called the periosteum, is either severely strained or torn loose, giving rise to inflammation and formation and deposit of bony matter on the surface of the bone, sometimes to such a degree that the parts are of excessive size, and the leg so lame that it is only with great difficulty that the animal can walk. The animal may, indeed, as in the case of bad spavin, be capable of doing farm work even with a stiff leg, but is totally unfit for driving on the road.

What to Do. Precisely the same treatment must be pursued as in the case of bone spavin.

RING-BONE.

This is a deposit of bony matter above and below the coronet of the foot, just where the hair begins above the hoof, or of the bone of the hoof, as the coffin bone is called, or bony growth on the pasterns.

Causes. It is caused by heavy work, hard pulling by draft horses, bruises of the bone by pounding of the feet on hard roads and pavements, generally beginning as inflammation of the membranes covering the bones, and at these points giving attachments to the ligaments at the side of the lower, or small pastern bone, or of the lower end of the upper or large pastern. Sometimes the bony formation proceeds to such an extent, involving and covering the whole surface, as to produce a kind of club foot.

How to Know It. There may be lameness or not, except on hard ground, or upon binding the limb, in old-seated ring-bones. During the beginning of the evil, or while there is inflammation, and a tender, elastic swelling, and a more or less doughy state of the soft parts. In the course of the disease this matter becomes hard, from being turned into a soft or spongy bony formation. The swelling may be scarcely seen and confined to the sides of the pastern bone, or there may be great enlargement of the whole surface. If the trouble occurs in a fore-leg, the heel is put down first; if the ring-bone is in the hind-foot, and in the sides or back part of the pastern, the toe will be put down first.

What to Do. For the fore-foot, put on a thin-heeled bar shoe. If in the hind-foot, a high-heeled shoe. That is, if the animal walks on the toe, use a high-heeled shoe; if on the heel, a thin-heeled shoe. If there is inflammation, known by heat and tenderness, use fomentations of hot water, perseveringly applied until it is reduced. Then blister severely with the following:

10 Drops muriatic acid,
20 Grains corrosive sublimate,
20 Grains camphor,
1 Ounce oil of turpentine.

Mix, and apply until a sufficient blister is formed; then wash off to prevent blemish and keep the blister running as long as possible, by covering with a rag well smeared with mutton tallow. Blister again if necessary. Or, use the means pursued in spavin, oleate of mercury, if the case is not difficult.

If the ring-bone has been of long standing, the only relief will be the growth of bony matter over the joint. There will be more or less stiffness in the joint, but the horse may do slow work. Old horses are more difficult to cure than young ones, and in any case to avoid blemish, the case must be taken at the first indication. Then thorough fomentations, slight blistering, a proper shoe and rest will accomplish a cure. If there is simply a hardening of the integuments, oleate of mercury, in developed ring-bone or spavin, will reduce so much of it as is not already bony growth.

CHAPTER XII

Diseases of the Feet.

CRACKED HOOFS.

Causes. This is not an unusual occurrence in horses, and arises as a rule, from weak and brittle hoofs, produced by a dry state of the hoof, whatever may be the cause, whether fever or other causes of degeneration. The prolific causes are the dying of the wall of the hoof, uneven bearing of the shoe, calking or other wounds or injuries of the coronet. This crack may extend down from the coronet according to the time it is allowed to run.

What to Do. If taken early, a bar shoe, having an even bearing all round will generally relieve the difficulty. In connection with this, apply a plaster of pitch over the injury.

If the crack becomes determined, it must be kept closed together by clinching a thin nail on each side of the gap near the bottom and top, or else with thin wire.

Also burn a groove just below the crack about an inch long nearly down to the quick. It is also well to slightly blister the coronet at the top of the crack. An efficient and stimulating liniment will be the oil of cantharides, made as follows:

1 Ounce powdered cantharides,
8 Ounces olive oil.

Mix in a strong bottle and set it in water kept near the boiling heat for three or four hours, and filter through close linen. Apply once a day with friction until the part is tender. Let the horse have rest, or turn into a pasture until cured.

HOOF ROT.

This difficulty, sometimes called tender feet, arises from diseases of various

kinds, spavin, ring-bone, chronic founder, navicular disease. There is a dry, feverish state of all the parts, and the hoof, and especially the sole, becomes decayed and sometimes perishes entirely.

How to Know It. The bottom of the hoof is dry and chalk-like, so that it may easily be dug away with the point of a knife, or even easily scraped. The frog of the foot diminishes in size, and the ankle joints are apt to swell. The horse steps short and goes lame, if in one foot, or if in both, cripples in his gait. The affected foot will be pointed forward to enable the animal to rest on the sound foot, or if both are affected, first one and then the other will be placed forward. Sweeny or wasting of the muscles of the leg and shoulder result simply from disease of the limb.

What to Do. Remove the shoe, pare away all unsound portions of the hoof until all the pumiced parts are got rid of; also the frog and the sides of the hoof. Stimulate the bottom of the hoof by washing with:

1 Ounce camphor gum,
1 Ounce corrosive sublimate,
1 Pint oil of turpentine.

Once a day for three days, heating it in with a hot iron. Then omit for two or three days and commence again. During the treatment the animal must be kept in the stable and the feet should be kept dry. When hoof rot is due to other diseases, as ulceration of the navicular joints, it will do no good to follow the rule laid down until the cause of the difficulty is removed.

CORNS.

Corns are in very many cases the result of other diseases, tending to weakening of the sole rather than the result of a bruise to a sound hoof. Thus a horse with corns should be thoroughly examined for injury to the bones of the hoof, rotten hoof, etc.

Causes. A bruise on the sole below the bars and the wall at the heel, producing a horny tumor or hardening, which presses on the quick. Sometimes there is inflammation, owing to the formation of matter which works out either at the top of the hoof or at the toe, from the formation of a fistula. Then it is Quittor. They may be found on either side of the heel, but usually on the inner or weaker side.

How to Know It. There will be flinching when the walls of the hoof and sole are seized and strained with the pincers; thus revealing on which side and the locality of the corn. The toe will be pointed, when at rest, and with the

heel slightly raised. In motion the gait will be short and stumbling. If it has proceeded to suppuration, the pain will be so extreme that the horse will fear to put the foot to the ground. If there is a horny tumor forming, it may be known upon paring the hoof by the evident appearance of a white, spongy, horny formation, as in sand crack.

What to do. If the corns proceed from other disease, causing contraction and other disabilities of the hoof, remove these causes and the corns will disappear. If the corns proceed from a simple and recent bruise, remove the shoe and rasp down the bearing surface of the heels, so there may be no pressure. That it, the heels should be rasped lower than the other bearing surfaces. If there is inflammation, let the hoofs rest in cold water, or keep them moist with a wet cloth and the sole with a soft sponge, or the whole hoof may be enveloped in a large sponge cut to fit. The animal should wear a bar shoe, arranged to avoid pressure on the parts affected. When the foot ceases to be tender, keep the hoof and sole smeared with the following ointment, to render it soft and promote healthy growth:

½ Ounce tallow,
1 Ounce oil of turpentine,
4 Ounces beeswax.

Use the horse at light work until entirely recovered.

If the difficulty be found to be a suppurating corn (one containing matter), the hoof must be cut down to let all the matter escape; cut away all the horn that has become separated from the quick, and pare away all the horn around the parts to a thin edge. Poultice the part with a linseed poultice, renewed until there is no longer tenderness, and the surface is smooth and healthy. Then put on a bar shoe with a leather sole, and fill the space from behind with tar held in place with a stuffing of tow. Give entire rest and no pressure on the heel until the sole of the foot has grown out naturally.

If the corn has a tumor it should be cut out, and the same treatment pursued as advised for a corn that has formed matter.

INJURIES OF THE FROG.

The frog of the horse's foot is especially liable to injury from being bruised upon projecting stones, pierced by nails and splinters. It is also liable to inflammation of the secreting membrane, resulting in the formation of matter, and to canker.

What to Do. In all bruises with soreness, pare away the frog carefully

until the difficulty is found. If bruised, treat it by using the liniment made of:

1 Ounce camphor gum,
1 Ounce corrosive sublimate,
1 Pint oil of turpentine.

If pierced with some sharp substance extract it and inject tincture of aloes and myrrh. If the difficulty be thrush, caused by exposure to wet and filth, bruise of the frog, hard substance lodged in the cleft, or other cause, there will be soreness of the skin behind the cleft of the frog, and a bad smelling discharge from the cleft with more of less lameness.

Wash the affected parts thoroughly. Cut away all ragged surfaces and press into the cleft or wound dry calomel, or finely powdered sulphate of copper.

CANKER.

This is one of the diseases that may arise from the prick of a nail or bruise. Again it may occur without apparent cause.

How to Know It. It is a disease most prevalent in heavy, coarse-bound horses. The frog will become large, spongy, and covered with a fungous growth of a cheesy texture, and throwing out an abundant colorless, bad smelling fluid. If cut away it will again quickly spring into growth. The discharge is more offensive than in thrush, and the disease more obstinate, often resisting for a long time.

What to Do. The horse must be in a clean, dry, well-ventilated stable. All diseased portions of the hoof must be carefully pared off so far as the knife may be able. The cure consists in destroying the fungoid granulations. Thus in cutting do not be alarmed at the sight of blood from the canker. Over the well portion of the hoof spread the following:

4 Grains chloride of zinc,
1 Ounce flour,
Mix, and apply dry.

Cover the diseased parts with the following:

½ Ounce chloride of zinc,
4 Ounces flour.

Tack on the shoe lightly, pad the parts within the shoe well, and secure good pressure by cross pieces driven firmly within the shoe. The second day after remove the shoe and padding, cut away everything that appears to be in a sloughing condition; repeat the dressing every two days until the parts are sound. As soundness begins to appear in portions of the surface, dress these

with the following; that is, when fungoid granulations have ceased to sprout:

2 Grains chloride of zinc,
1 Ounce flour.

As the canker improves, the dressings may be extended to the third or fourth day, and during the whole time of treatment the horse should be liberally fed, and be exercised gently for four hours every day.

SAND CRACK.

These are of two kinds, quarter crack, occurring in the inner quarter of the fore foot, and toe crack, occurring in the toe of the hind foot, both being cracks and fissures in the walls of the hoofs, beginning at the coronet and extending downwards.

Causes. Defective quality of the hoof, causing brittleness; bad shoeing, or splitting of the hoofs from hard driving on solid roads.

How to Know It. When the horse leans his weight on the hoof, the crack will open; when the foot is lifted the crack will close. Sand and dirt work into the parts, causing excessive pain and lameness, often fever and the formation of matter.

What to Do. In recent cases, before there is much inflammation, all that will be necessary to do will be to remove the shoe, cleanse the crack thoroughly, cutting into it if there is dirt or sand lodged inside, drawing the hoof together closely again, by the means of two thin clinch horse-shoe nails, one at top and one at the botton, and filling with the following composition:

½ Ounce tallow,
1 Ounce oil of turpentine,
2 Ounces resin,
4 Ounces beeswax.

Melt together, and fill the crack with it quite warm, and let it cool. The foot should be protected so no dirt can enter, and the horse turned to pasture until a new hoof is grown, placing a bar shoe on the injured hoof.

If the crack is an older one, and there is inflammation, the edges must be pared and the fissure sufficiently laid bare so it may be thoroughly fomented to reduce the inflammation, and poulticed until it assumes a healthy appearance. The parts must then be brought firmly together by means of clinch nails; covered with the above ointment; a bar shoe put on, and a new hoof allowed to grow.

TOE CRACK.

A hoof with crack in the toe should be treated precisely as though the diffi-

culty occurred in another portion of the wall of the hoof. The difficulty in all cracks of the hoof, is the difficulty in healing, for the reason that when the animal steps, especially on uneven ground, the walls are strained apart. In sand-cracks, the principal care must be to extirpate the grit and dirt, whatever the amount of paring and cutting it may take. If granulations appear, they must be cut out. Then wash with a solution of chloride of zinc, made as follows:

1 Grain chloride of zinc,
1 Ounce of water.

Whatever the quantity made, let it be in this proportion. Cleanse the whole interior of the crack fully. In cutting away the hoof, it should present an oval shape when finished, the points at top and bottom.

Having cleansed the inner portions, if the crack does not extend completely from the coronet to the toe, with a firing iron, just hot enough to cause the horn to smoke, the iron not at a red, but at a black heat, soften the crust and continue the cutting until the diseased portion is all exposed. If granulations (proud flesh) show, cut it out and let the parts bleed. Then continue the application of the chloride of zinc lotion three times a day until a healthy reaction is produced. The crack may then be stopped with pitch or tar and tow, or gutta percha; a bar shoe put on with two clips in front to hold the parts together, and the animal kept in a clean, soft pasture until a new hoof is grown. An examination of the parts being made from time to time to see that no grit or foreign substance has entered to increase the difficulty.

Sand-cracks, quarter-cracks, and false-quarters, will require time to ensure full recovery, and the time so consumed should not be grudged.

CHAPTER XIII.

Miscellaneous Minor Diseases.

EPITHELIAL CANCER.

This is a nipple-like cancer, which sometimes appears on the lips of the horses. It should be promptly removed with the knife, after which the part should be burned over with lunar caustic.

STINGS AND BITES.

Hornets, wasps and bees often attack horses, and sometimes cause them serious injuries. To relieve a case of this kind, we use one of the following remedies, with which the coat must be thoroughly saturated: Solution of ammonia; weak carbolic acid wash, (1 ounce to a quart of water; 1 pint of lime water, in which 1 drachm of carbolic acid is dissolved; or oil of lobelia.

Cases are recorded of horses having died in consequence of an attack of bees. In ordinary cases, the preceding direction properly carried out will be sufficient; but in more aggravated ones, sponge the whole body with lime water, and then smear with linseed oil. If lime is not accessible, use a weak solution of soda. Spirits of turpentine and laudanum, in equal parts, will give relief.

To prevent the stings of gad-flies, make a strong infusion of the green bark of the elder, and wash the flanks before going out. To prevent the bites of buffalo-gnats, that are so troublesome along the lower Mississippi, cover the parts most likely to be attacked with a mixture of tar and lard—two parts of lard to one of tar.

THICK WIND.

This may be alleviated, and sometimes cured, by giving the following ball once or twice a day for several days in succession, as the animal may seem to need it:

1 Drachm powdered camphor,
1 Drachm powdered niter,
1 Drachm powdered opium.

WIND-GALLS.

Causes. Wind-galls may arise either from strains, over exertion, or dropsy of the parts. As a rule they are elastic, round swellings on each side of the tendons, rarely becoming solid from coagulation of the lymph, unless as is occasionally the case, the strain is so severe as to cause inflammation of the bone, ulceration and bony deposit. They do no injury whatever, and do not cause unsoundness.

What to Do. If the puffs, wind-galls, are just appearing they may be scattered sometimes by a strong decoction of white oak bark and alum.

CHAPTER XIV.

MEDICINES.

What to Keep, How to Obtain, How to Prepare, and How to Give Them.

It is not necessary that every farmer should keep a large quantity of medicines on hand. A few simples will suffice, except in the case of those who, having a large stock of animals, require medicines to meet cases apt to arise. The great point is good care and attention, in health, and good nursing in sickness, as being most important in the care of farm animals. The day has past for purging for every ill that even horse flesh is heir to. Good nursing, attention to the general health, and to symptoms, with the prescriptions we have given, will enable any one to carry an animal through an ordinary sickness.

Every person who has carefully studied this work will see the necessity of keeping some medicines on hand, since there is no reason why with the aid of what we have presented, he may not be able to treat nine in ten of the diseases which farm animals are subjected and without the aid of a professed veterinary surgeon. The operations of medicine may be defined as follows:

ALTERATIVES.

Medicines acting generally and continually on the system. Especially on the blood and glandular system. Among the alteratives are: antimony, niter, sulphur, ginger, calomel, arsenic, iodine, iodide of potassium, sulphite, or bi-sulphite of soda.

Antimony—Black sulphuret of antimony. Dose 1 to 2 drachms. Given in connection with sulphur, 1 to 2 ounces, and niter, 4 to 6 drachms.

Ginger—Give as an alterative only in connection with other medicines.

Calomel—Give in broken doses, say 1 scruple. Another form of mercury, sulphuret, give 3 drachms once a day in connection with 4 drachms of cream of tartar in a pint of water. This has been recommended in obstinate cases of surfeit, and other affections of the skin.

Arsenic—Dose, 5 to 10 grains daily. It should only be used under direction of a veterinarian. Its action is principally on the nerves. Fowler's solution of arsenic contains 4 grains to the ounce. It is the best form in which to administer the mineral.

Iodine—As an alterative, give 10 to 20 grains.

Iodide of Potassium—Dose ½ to 1 drachm. Valuable in chronic rheumatism, chronic cough, scrofulous enlargements, and to cause absorption in pleurisy, and inflammation of the lungs.

Bi-sulphite of Soda—This must not be confounded with sulphate. Dose ½ to 1 ounce, relieves tymphany.

ANTISEPTICS.

These are used to arrest mortification and putrefaction. The principal agents are charcoal, creosote, pyroligneous acid, sulphate of zinc. They should be applied directly to the parts affected.

ASTRINGENTS.

These are agents used to stop or lessen discharges, either of the bowels, nose, blood vessels, kidneys or glands, and are applied both internally and externally. Among those usually employed are: acetate of lead, alum, catechu, ergot, kino, opium, per sulphate of iron, tannin, the mineral acids, and gallic and tannic acids.

They should not be used when there is considerable inflammation; nor for diarrhoea, in the beginning of a difficulty, since this flux is often an effort of nature to relieve the body by natural means.

Acetate of lead—Dose, 1 to 2 scruples. As a wash, use a saturated solution.

Alum—Dose, 2 to 3 drachms; useful in sore throat and dysentery. In powder, used for stopping the flow of blood.

Catechu—Dose, 2 to 5 drachms. Useful in diarrhoea.

Ergot—Dose, ½ to 1 ounce. Checks bleeding from the lungs, nose, stomach and bowels. As an astringent, for this purpose, it is better to give it by hypodermic injections, using ergotine in solution in five grain doses.

Kino—Dose, ½ ounce to an ounce. Given in diarrhoea.

Opium—Laudanum—Dose, powdered opium, 2 drachms. Laudanum, 2 to 4 ounces. It is a well known agent in relieving the spasms of colic, dysentery, lockjaw and other convulsive ailments. In diseases of the lungs and breathing tubes, if the respiration is short and quick, it should not be given. So, if there is much fever it should not be given until these symptoms abate.

Per sulphate of iron—Dose, 1 to 2 drachms. Useful for arresting bleeding or hemorrhage.

Tannin—Tannic acid is the best form. Dose, 10 to 20 grains. A powerful astringent in diarrhoea or mucus discharges.

CATHARTICS.

These are medicines acting strongly and directly on the bowels as a purge, in from 3 to 12 hours. Strong purgatives should not be given except it be necessary to thoroughly evacuate the bowels, and deplete the animal system. The principal agents employed are aloes, croton oil, linseed oil, podophyllin and salts.

Aloes, Barbadoes—This should always be used in preference to Cape aloes, which is more griping. Dose 4 to 8 drachms.

Croton oil—A powerful and sharp purgative, valuable in obstinate constipations. Applied externally it is apt to irritate and produce blemish. Dose internally, 20 drops.

Linseed oil—A safe, and pretty sure, mild purge. Dose 1 pint to 1 quart.

Podophyllin—This is the active principle of the May apple. It is both purgative and sedative. Dose 1 to 2 drachms. Its effect on animals is not so marked as on man. In the commencement of fevers it is excellent.

Salts—Sulphate of soda or Glauber salts is generally used when purgative effects are required. The dose is 1 to 1½ pounds. Epsom salts, sulphate of magnesia, dose 1 to 2 pounds, or 8 to 12 ounces, and repeated every three or four hours until an operation is had.

CARMINATIVES.

These are used in colic, griping, etc., and are often given with griping medicines. The principal agents are black pepper, caraway seeds, cloves, ginger, peppermint, sags, etc.

Black pepper—Dose 2 drachms. When a quick and powerful remedy is required give 2 drachms red (cayenne) pepper.

Caraway—Dose ½ to 1 ounce of the seeds, as a powder, or as an infusion.

Cloves—Dose ½ to 1 ounce of powdered cloves steeped in hot water and given warm, or 30 to 60 drops of the oil of cloves given in thin mucilage of gum arabic.

Peppermint (oil—Dose 15 to 30 drops in mucilage. Sage or any of the heating herbs may be given as a tolerably strong infusion or tea.

COUNTER IRRITANTS.

These are divided into classes: Rubefacients, which simply excite the skin to redness; vesicants, which blister, and suppurants which produce sores on the surface. They are serviceable by setting up inflammation on the surface near the seat of disease, in congestion and inflammation of internal organs; also of the bones, joints and tissues. Rubefacients are good in influenza, and other attacks of a general nature, where there is low fever; as, for instance, rubbing a paste of mustard on the legs and washing it off in ten or fifteen minutes. Vesicants should not be used when fever or inflammation is high, and suppurants are chiefly of value in old chronic complaints.

Rubefacients—Alcohol, ammonia, mustard, turpentine.

Vesicants—Cantharides, scalding water, and a hot iron at 212 degrees Farenheit.

Suppurants—Croton oil, ointment of tartar emetic.

CAUSTICS.

Agents which burn and destroy the flesh. Used to kill the virus in poisoned wounds, eat out proud flesh, destroy sloughs and stimulate old ulcers; to produce healthy action in fistula, and remove warts and other excrescences. Among the best agents are bettur of antimony, caustic potash, chloride of zinc, lunar caustic, (nitrate of silver), nitrate of mercury, nitric acid, and the iron at a white heat. Nitric acid must be used with care. It is powerful and intensely eating, causing extreme pain, but which soon ceases. It may be used by dipping a suitable slip of wood in the acid and applying.

DIAPHORETICS.

There are medicines to cause sweating or to increase the insensible perspiration, and thus relieve pressure on other organs. Acetate of ammonia in solution, Dovers powder, ipecac and cantharides are mainly employed; the animal being

covered quite warm. Warm water is also useful, but steaming the most prompt of all.

Acetate of ammonia—Solution. Dose, 2 to 3 ounces.

Dover's powders—Dose, 3 drachms.

Ipecac—Given in 2 to 3 drachm doses in warm water, until the effect is produced. Not especially useful for horses.

Cantharides—Dose, 4 to 5 grains.

DIURETICS.

These are medicines to act on the kidneys. Saltpeter, sweet spirits of niter, cream of tarter, turpentine and digitalis are principally used.

Saltpeter—Dose, 6 to 8 drachms.

Sweet spirits of niter—Dose, 1 to 2 ounces.

Cream of tartar—Dose, 1 ounce.

Turpentine (oil)—Dose, 1 to 2 ounces.

Digitalis—Dose, 15 to 20 grains.

Both diuretics and diaphoretics are similar in their action. If sweating is intended, it must be assisted with warmth and friction. If operation on the internal organs is required, warmth and friction should not be used.

DEMULCENTS.

These are gummy or glutinous substances, used to soothe and cover inflamed surfaces, or those in an irritable condition; as inflammation of the throat, stomach and bowels; in diseases of the kidneys, or for irritable conditions generally. Those most in use are: Linseed tea, gum arabic water, slippery elm bark tea, starch water and olive oil. Marsh mallows makes one of the most valuable agents known, being especially soothing to the bowels.

DISINFECTANTS AND DEODORIZERS.

The most valuable of these are, sulphate of iron, chloride of zinc, carbolic acid, chloride of lime, used for disinfecting and deodorizing drains, etc. The cheapest is a solution of sulphate of iron, a good handful dissolved to each bucket of water used. As an atmospheric fumigant and disinfectant, the following is cheap, and one of the best known:

½ Pound flowers of sulphur,
2 Pounds pine tar.

Mix with a gentle heat, saturate tow with it and burn without flame.

Carbolic acid in weak solutions, or crude carbolic acid in its liquid, impure form, as it comes from the gas works, is valuable for brushing over any wood, iron, brick or stone work. Also valuable for wetting cloths, and hanging up to destroy disease germs, keep away flies, etc.

The following formulas will be found valuable disinfectants:

1 Part sulphate of zinc,
1 Part powdered oak bark,
2 Parts sulphate of iron.

Mix into balls of proper size and place in drains, sink-holes and cess-pools.

Collins' disinfecting powder is made by adding 1 part of burnt alum to two parts of chloride of lime. Pour on water to thoroughly wet the mass, and set in shallow pans about the stable.

The following is a powerful disinfectant:

2 Pounds common salt,
1 Pint oil of vitriol.

Pour the oil of vitroil gradually and slowly over the salt, and the active disinfectant, muriatic gas, will be evolved.

EMETICS AND EXPECTORANTS.

What would act as an emetic, would be simply a nauseant with the horse. The horse does not vomit, nauseants act to loosen a cough and to loosen the mucus in the air passages and thus facilitate its expulsion. Nauseants also act as a substitute for the old practice of bleeding. Tartar emetic, blood root and sulphate of zinc are among those usually employed.

Tartar emetic—Doses, 1 to 1½ drachms, in connection with lobelia and saltpeter.

Blood root—Dose, from 2 to 4 drachms of the powdered root.

Sulphate of zinc—Dose, 1 to 2 drachms.

....**Tartar emetic**—This is often employed in connection with saltpeter and lobelia. Dose, tartar emetic, 1 drachm; saltpeter, 1 ounce; lobelia, 1 drachm.

NARCOTICS, ANODYNES AND SEDATIVES.

These run into the other, and are used to soothe pain, allay the irritability

of the system, and quiet excessive nervous action. Narcotics quickly quiet the system, induce sleep, and if taken largely, produce death. When given simply to allay pain they are called anodynes. The action of a sedative is to lower nervous force, reduce the pulse and abate febrile symptoms, especially in the beginning of acute inflammation.

Narcotics—Opium, or its preparations, laudanum and morphia, belladonna, tobacco and Indian hemp.

Opium is generally given as a tincture, in the form of laudanum, dose, 1 to 2 ounces.

Morphia—Dose, 3 to 5 grains.

Belladonna—Dose, 2 ounces.

Indian hemp—The dose of this drug is ½ to 1 drachm.

Sedatives—Aconite—tincture. Dose, 20 to 30 drops.

Veratrum viride—The dose of this is 1 scruple.

RELAXANTS.

These deprive the muscles of their power. Of this class lobelia should be given in doses of 1 to 2 drachms.

STIMULANTS.

These are, alcohol, and are given in the form of brandy, whisky, rum, gin and ale. The latter when an animal is exhausted by hard driving. The dose of brandy, whisky or gin is 3 to 6 ounces, and of alcohol 1 to 3 ounces diluted with water. Other stimulants are: ether, dose, 1 to 2 ounces; carbonate of ammonia, dose, 2 to 4 drachms; turpentine, dose, 1 to 2 ounces; and ginger, dose, 1 ounce. The ginger to be given as a tea.

Stimulants are used when it is necessary to quickly raise the animal from exhaustion. In nervous exhaustion its effects are marked, but it must not be given in inflammation or fever.

TONICS.

Tonics sharpen the appetite, increase the nervous vigor, and thus improve the condition of the patient. Many horsemen are fond of giving condition powders, the main value of which lies in the alteratives and tonics contained. In this they suppose that they are beneficial to already healthy animals. Nothing

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could be farther from the truth. They are not beneficial unless the animal is out of condition and the system needs rallying. To get the best effects from tonics, they should be given in light doses, and continued for a considerable time. Then intermit for a few days, and if necessary commence again, or substitute another tonic. The mineral tonics, sulphate of iron, sulphate of copper and arsenic are more active than the vegetable tonics, Peruvian bark, gentian, quassia, etc., though often the two forms combined act with greater efficacy.

VERMIFUGES.

These are medicines supposed to be useful in expelling worms.

For round worms, common salt, to be licked at will, is one of the best agents to expel them. Oil of turpentine 1 ounce. Tartar emetic, 2 drachms and sulphate of iron 2 drachms; give five or six days in succession, and follow by a purge. Four to 6 drachms of aloes is one of the best direct vermifuges.

Tape worm—Oil of turpentine, 1 ounce doses; or root of male shield fern, 1 ounce of the extract. Give all vermifuges fasting, and at the end of four hours give a purge of aloes. For weak animals give areka nut, 1 ounce.

In using a vermifuge it is always better to clear the bowels before giving it, and in case the worms are in the intestines give injections as well as a purgative by the mouth. It should be remembered that vermifuge that destroys by mechanical irritation as iron filings, pounded glass, etc., should never be given.

From the foregoing the action of the different classes of medicines will be learned. Some of the more common we have given as examples. In the vast list of drugs used in medicines and which are drawn alike from the animal, vegetable and mineral kingdoms, and some of them, the most valuable, being deadly poisons, must not be given in too large doses; the practitioner cannot be too careful in their use. The doses we have given in this chapter are from medium to large. If there is any doubt in using those, especially the strong poisonous extracts or crystals, use the smaller.

There are really but few medicines out of the large list that are of real and well known value in common practice. The druggist in preparing medicines, uses delicate scales and weighs accurately. It is always better that they compound the prescriptions if possible; yet, as it is not always convenient to seek the druggist, especially when a stock of medicines in ordinary use is kept, it is better to have a pair of scales and a liquid measuring glass. We therefore append a table of weights and measures as used by veterinarians:

WEIGHTS AND MEASURES.

APOTHECARIES' WEIGHT.

20 grains make 1 scruple,
3 scruples make 1 drachm,
8 drachms make 1 ounce,
16 ounces make 1 pound.

WINE MEASURE.

60 minims, or drops make 1 drachm,
8 drachms make 1 ounce,
16 ounces make 1 pint,
2 pints make 1 quart,
4 quarts make 1 gallon.

Sufficient accuracy in fluid measure for anything not violent in its action, will be the following:

60 drops, or 1 tea-spoonful, make 1 drachm,
4 tea-spoonfuls, or 1 table-spoonful, make ½ ounce,
2 table-spoonfuls make 1 ounce.
1 wine glassful makes 2 ounces.
1 tea-cupful makes 4 ounces.
1 tumblerful makes ½ pint.
1 tin-cupful makes 1 pint.

A handful of flaxseed, or other seed, usually innocent in their nature, will weigh about 2 ounces; a handful of leaves of dried herbs will weigh about 1 ounce.

MEDICINES TO BE KEPT AND DOSES.

The following drugs will be found handy. Keep everything in white bottles well corked. Corrosive substances must have ground glass stoppers. The druggist, if so instructed, will arrange things. Quantities of these to be kept should be about ten doses each, 1 dose is:

1. **Acetic acid**—Antidote to acids, cooling astringent. Horse, 1 drachm; ox, 2 drachms; sheep, 1 scruple.

2. **Tincture of aconite**—Sedative, diaphoretic. Horse, 20 to 30 drops; ox, 30 to 40; sheep, 3 to 5 drops.

3. **Alcohol**—Stimulant, diuretic, narcotic. Horse, 1 to 3 ounces; ox, 3 to 6 ounces; sheep, 1 to 2 ounces. Locally, cooling astringent.

4. **Barbadoes aloes**—Purgative. Horse, 4 drachms.

5. **Alum**—Astringent. Horse, 2 to 3 drachms; ox, 3 to 4 drachms; sheep, ½ to 1 drachm.

6. **Ammonia, liquid**—Diffusible stimulant, anti-spasmodic, anti-acid, diuretic. Horse, ½ ounce; ox, ½ to 1 ounce; sheep, ½ to 1 drachm.

7. **Carbonate of ammonia**—Diffusible stimulant, anti-spasmodic, anti-acid, diuretic. Horse, 2 to 4 drachms; ox, 4 to 6 drachms; sheep, ½ to 1 drachm.

8. **Anise seed, caraway, cardamon, fennel seed**—Stomachic, carminative. Horse, 1 ounce; ox, 1 to 2 ounces; sheep, 2 to 4 drachms.

9. **Arnica tincture**—Stimulant, diuretic. Horse, 1 drachm; ox, 1 drachm; sheep, 1 scruple.

10. **Assafoetida**—Diffusible stimulant, carminative, vermifuge. Horse, 2 drachms; ox, 4 drachms; sheep, ½ to 1 drachm.

11. **Balsam of Peru**—Stimulant, anti-spasmodic, expectorant. Horse, 1 ounce; ox, 1 to 1½ ounces; sheep, 2 drachms.

12. **Borax**—Nerve sedative, uterine stimulant. Horse, 2 to 6 drachms; ox, ½ to 1 ounce; sheep, ½ to 1 drachm.

13. **Blackberry root**—Astringent. Horse, 2 to 4 drachms; ox, ½ ounce; sheep, 2 scruples.

14. **Camphor**—Antispasmodic. Horse, 1 to 2 drachms; ox, 2 to 4 drachms; sheep, 1 scruple.

15. **Carbolic acid**—Sedative, anodyne, astringent, antiseptic, disinfectant. Horse, ½ to 1 drachm; ox, 1 drachm; sheep, 10 drops.

16. **Cherry bark, wild**—Expectorant. Horse, ½ ounce; sheep, 2 to 3 scruples.

17. **Copavia**—Stimulant, diuretic, expectorant. Horse, 2 to 4 drachms; sheep, ½ to 1 drachm.

18. **Cream of tartar**—Diuretic. Horse, 1 ounce; sheep, 4 to 6 drachms. Laxative: horse, 5 ounces; ox, 5 to 8 ounces, sheep, 1 to 2 ounces.

19. **Ergot**—Checks bleeding, parturient. Horse, ½ to 1 ounce; ox, 1 ounce; sheep, 1 to 2 drachms.

20. **Iron, peroxide**—Tonic. Horse, 2 to 4 drachms; ox, 4 drachms; sheep, 1 drachm. An antidote to arsenic.

21. **Lime, chloride**—Checks tympany, disinfectant. Horse, 2 to 4 drachms; sheep, 1 to 2 drachms.

22. **Linseed oil**—Laxative. Horse, 1 to 2 pints; ox, 1 to 2 quarts; sheep, ½ pint.

23. **Lobelia**—Sedative, anti-spasmodic, expectorant. Horse, 1 to 2 drachms; ox, 1 to 3 drachms; sheep, 15 grains; swine, 5 to 15 grains.

24. **Mallow**—Demulcent. Give freely of cold infusion.

25. **Mentha piperita (peppermint)**—30 to 60 drops.

26. **Oak bark**—Astringent. Horse, 1 ounce; ox, 2 to 4 ounces, sheep, 4 drachms.

27. **Olive oil**—Laxative. Horse, 1 to 2 pints; ox, 2 to 3 pints; sheep, 3 to 6 ounces.

28. **Opium**—Narcotic, sedative, anodyne, anti-spasmodic. Horse, ½ to 2 drachms; ox, 2 to 4 drachms; sheep, 10 to 20 grains.

29. **Opium, tincture laudanum**—Narcotic, sedative, anodyne, anti-spasmodic. Horse, 1 to 2 ounces; ox, 2 ounces; sheep, 2 to 3 drachms.

Of the powdered drug, give: Horse, ½ to 2 drachms; ox, 2 to 4 drachms; sheep, 10 to 20 grains.

30. **Pepper, black**—Stomachic, stimulant. Horse, 2 drachms; ox, 3 drachms; sheep, 1 to 2 scruples.

31. **Pumpkin seeds**—Vermifuge, taeniafuge. Horse, 1 pint.

32. **Rhubarb**—Laxative, tonic. Horse, 1 ounce; ox, 2 ounces; sheep, 1 drachm.

33. **Resin**—Diuretic. Horse, 4 to 6 drachms; ox, ½ to 1 ounce; sheep, 2 to 4 drachms.

34. **Soap**—Diuretic, anti-acid, laxative. Horse, 1 to 2 ounces; sheep, 2 to 6 drachms.

35. **Silver nitrate (lunar caustic)**—Nerve tonic. Horse, 5 grains; ox, 5 to 8 grains; sheep, 1 to 2 grains.

36. **Sweet spirits of niter, Spirits of nitrous ether**—Stimulant, anti-spasmodic, diuretic, diaphoretic. Horse, 1 to 2 ounces; ox, 3 to 4 ounces; sheep, 3 to 6 drachms.

37. **Tobacco**—Sedative, anti-spasmodic, vermifuge. Horse, 4 drachms; ox, 4 to 6 drachms; sheep, 1 drachm.

38. **Tar**—Expectorant, antiseptic. Horse, ½ to 1 ounce; ox, ½ to 2 ounces; sheep, ½ ounce.

39. **Turpentine oil**—Stimulant, anti-spasmodic, diuretic. Horse, 1 to 2 ounces; ox, 1 to 1½ ounces; sheep, 1 to 2 drachms. Vermifuge: Horse, 2 ounces; ox, 2 to 3 ounces; sheep, 4 drachms.

40. **Valerian**—Diffusible stimulant, anti-spasmodic, vermifuge. Horse, 2 ounces; ox, 2 to 4 ounces; sheep, ½ ounce.

41. **Wild cherry bark**—Expectorant. Horse, 1 ounce; ox, 1½ ounces; sheep, 3 drachms.

42. **Zinc, sulphate**—Astringent, tonic. Horse, 1 to 2 drachms; ox, 2 to 3 drachms; sheep, 15 to 30 grains.

GRADUATING DOSES.

In the administration of medicines the following statement of ages and doses will be found valuable in determining quantities. The doses mentioned in the preceding list being full ones:

A horse of 3 years, ox 2 years, sheep 1½ years and swine 15 months old, should have a full dose.

A horse 15 months to 2 years; cattle 1 to 2 years, sheep 9 to 18 months, and swine 8 to 15 months, ½ of a full dose.

A horse 9 to 18 months, cattle 6 to 12 months, sheep 5 to 9 months and swine 6 to 8 months, require ¼ of a full dose.

A colt 5 to 9 months old, calves 3 to 6 months, lambs 3 to 5, and pigs 3 to 6 months old, may have ⅛ of a full adult dose.

Colts 1 to 5 months old, calves 1 to 3 months, lambs 1 to 3 months, and pigs 1 to 3 months old, may have 1-16 of the dose.

Nervous, excitable animals require less than others. The continued use of medicines renders their action slow and decreases their power. The influence of disease also checks or modifies action. In diseases of the brain, and spinal cord, and in impaction of the stomach, double quantities must sometimes be given, while in low fevers, ½ the usual quantity may produce evil, and sometimes prove fatal.

As a rule, anodynes, narcotics, sedatives, stimulants and anti-spasmodics may be repeated once in four hours until the required effect is produced.

Twice daily may be given as the rule for alteratives, refrigerants, tonics, diaphoretics and febrifuges.

Emetics are not given to horses.

Purgatives should not be given the second time until the first has had full time to operate. In the horse not before 36 hours; cattle and sheep 12 to 15 hours; swine 7 to 10 hours.

Draughts of tepid water, or swine gruel, assist the operation of purgatives.

A ball is not to be made round, but longer than it is wide and not larger than a walnut for horse or ox. It must be small enough so the animal may swallow it easily. Balls are made of drugs in powders mixed into a semi-solid state with honey or molasses and linseed meal and covered with oiled tissue paper.

Drenches (liquid medicines) are made as infusions, with warm or cold water, or as decoctions with boiling water. Powdered substances not solvent in water are mixed with thick gruel or mucilage.

A ball is best given with the aid of a balling iron. This has been previously

described. Put the iron between the front of the jaws, and place the ball well back on the tongue with the hand. Hold the head well up until swallowed. This may be aided by stroking the throat next the jaws.

Liquids are given from a horn or thick quart bottle with a pretty long neck, such as a champagne bottle. No liquid or irritating medicine should be given until sufficiently diluted with water so that it will not injure the mouth if held therein some minutes.

Oil of turpentine, croton oil and other strong irritating substances that will not mix with water, should be mixed with palm or olive oil, milk beaten with eggs, or it may be given in mucilage as the case may require.

Powerful agents, that do not irritate, act promptly, injected under the skin with a hypodermic syringe. A surgeon's advice should be used in administering them.

Injections are given with a horse syringe. There are patent injectors that pump in the liquid continuously. Small syringes are used for injecting in abscesses. Also the hypodermic syringe for injecting under the skin.

CHAPTER XV.

Breeding.

WHAT TO BREED, HOW TO BREED AND CARE OF MARES AND FOALS.

To all persons engaged in raising horses, the subject of breeding is of the first importance; for, unless the laws which govern reproduction be, to some extent, understood and acted upon, all efforts to improve existing stocks, or to produce horses for particular kinds of service, must depend on chance, and, of course, in most cases, prove unsatisfactory. The great law of reproduction, that "like begets like," obtains with universal sway, both in the animal and vegetable kingdoms of nature. But every circumstance, however trifling, affecting either the male or the female, will have a corresponding influence on the offspring. Every farmer knows how mysteriously his genuine white wheat becomes degenerated when his neighbors pay no attention to keeping a good stock of wheat. And this degeneracy is only the result of the fine dust from the bloom (called pollen) being carried by the wind from their fields to his. As a general rule, nature endeavors to impress the offspring with the type of both parents. And we usually find a more or less perfect blending of the qualities of both in the offspring, with a decided prominence of those qualities peculiar to only one of the parents. And this does not extend merely to physical organization, but is equally true of metnal characteristics, and also extends to the propagation of the diseased condition, or predisposition to the diseases of the parents. There is scarcely a malady to which the horse is subject which is not hereditary, or to which a predisposition, at least, may not be transmitted. This is most certainly true of thick-wind, roaring, blindness, spavin, curb, contracted feet, grease, and many other diseases; and particularly of viciousness. But as the male only furnishes the vivifying principle (the pollen) to the egg (the ovum) of the female, while the female furnishes the nutriment of the embryo animal from her own secretions, we would naturally expect the offspring to partake more of the qualities of the female than of the male. And this fact

shows that the selection of a mare to breed from is of more importance than the selection of the horse to breed to—a truth which seems to have been almost entirely overlooked, practically, at least, in this country. For we find that farmers, as a general thing, instead of breeding their best mares, keep them for labor, and breed those which are unfit for labor on account of their age, their viciousness, or even their positively diseased condition. Hence, although very good stallions are to be found in every part of our country, at least four-fifths of all our horses bear evident marks of hereditary disease, malformation, or viciousness. Though the defects of the parents may not appear in the immediate progeny, they will most certainly be found in the second generation. From the foregoing considerations we may deduce the following important points to be observed in breeding:

First: The mare should be selected from a stock known to be suited to the purpose for which it is proposed to breed. She should be of proper age and size, well formed, of good color, proper gait, and free from any disease or malfomation, or hereditary taint.

Second: Select a stallion of good blood, but not of near kin to the mare, which will be as nearly as possible a perfect complement to the mare; by which it is meant that if she is deficient in any point, this shall be remedied by his peculiar excellence in the same point.

Third: It is more important that the ancestry of the mare should be known to be healthy and of good stock than that the same should be known of those of the stallion; for, although some mares breed after the horse, I believe that it may be truly stated that three-fourths breed after their own stock.

To illustrate more fully these principles, suppose the mare to be too fine in her limbs; to remedy this in the offspring, the horse should be even heavier than desirable, but not clumsy. The dam and the sire should always be paired, their points should be well compared, so that any defect in the one may be counteracted by a contrast in the other. A breeder often puts several mares to the same horse, and by so doing seldom gets the kind of horses he intends to raise; for it can not be supposed that any man will be so careful in selecting his mares as to have them all suitable to breed to the same stallion. Farmers often pursue this course because it is more convenient to have all their breeders served by the same horse. But they pay dearly for their convenience when their best mares bring colts of the most inferior character, and fit for anything else than the object for which they intended them. This subject demands the most careful consideration by all who would perpetuate a good stock or improve an inferior one.

Another very important point to be observed in breeding is, never to put

a mare to a stallion of the same stock, if they are nearly akin; for the foal will be delicate, and seldom as good or as large as either the dam or the sire, and never as durable or as well mettled. Natural deformity may generally be traced to the fact that the dam and sire were too nearly akin. A distinguished author justly remarks on the subject of "breeding in and in" as it is called, that "it is a fact, however much some may deny it, that strict confinement to one breed, however valuable or perfect, produces gradual deterioration." To pursue successfully the system of crossing requires much judgment and experience; for the bad qualities of the cross are easily ingrafted on the original stock, and, once ther, are not for several generations, got rid of; and the good ones of both are occasionally neutralized to a most mortifying extent. Crossing should be pursued with great caution, and the most perfect of the same breed should be selected, but varied by being frequently taken from different stocks.

We must again recur to the very pernicious but frequent practice of breeding on infirm, small, ill-shaped, bad-colored mares, and those positively diseased, or predisposed to disease by hereditary taint—a practice which cannot be too severely censured. The author once interrogated a number of gentlemen who had bought at auction, several small, ill-shaped and diseased mares, to know why the should have purchased such, when they were certainly able to have got good-sized, well-formed and sound ones. One of the gentlemen replied that "he knew his mare was unfit for much service, but he got her cheap, and, as he had plenty of grass, he intended to turn her to breed." "My friend, your mare is better suited to any other purpose. Suppose you put her to a horse, and raise a colt, you cannot expect it, at the age of four or five years, to bring more than fifty or seventy-five dollars; and if any hereditary ailment should descend to it, it will not bring enough to pay the keeping of the dam for the six months she suckled. Now, suppose you had taken the opposite course, and purchased a large, well-formed, good-blooded mare, free from hereditary ailment, and put her to a judiciously selected stallion, you would have stood a fair chance of raising a colt worth double the price of the former, and you would also have had the profitable labor of the mare." Two of these gentlement followed our counsel, disposed of their scrub mares, and purchased mares, and are now raising, perhaps, the best horses in their vicinity.

Another subject of importance, is the unpardonable practice of breeding mares at two years old. This hinders the growth and spoils the form of the mare. Thus, before her constitution is matured or her strength developed, she is overladen, which crushes down her joints especially the fetlock, changes the natural symmetry of the body, and also has a tendency to injure the form of the back and ribs. After this burden is got rid of, at foaling, then comes the reduction on the system by suckling of the foal. All these influences com-

bined destroy the strength, form, and size of the mare. Besides all this, the foal comes of small size, not having had room in the space allowed by nature, and will necessarily be very delicate. It also has to be suckled by a mare that must continue to grow, and needs all that nature furnishes for that purpose. Thus both the dam and foal must be deprived of the full, natural demands of their systems, and they are both injured for all future time.

If a mare is well treated through life, allowing her to mature before putting her to breed, she will continue to bring good foals until she is twenty, and some even above that age. But if hard worked and poorly fed, so as to show the effect of such treatment, she can not be expected to bring and raise as good foals as if she had been otherwise treated.

The mare is said to go with foal eleven months or three hundred days; but fully developed foals have been brought forth five weeks earlier than this, while in other instances mares have carried their foals six weeks beyond this time. Farmers should not lose sight of this in putting their mares; for they should have their colts come at a time when there is some grass, as the mare will do much better not to be confined entirely to dry feeding at foaling. Some writers say that from the time a mare is put to the horse she may be used generally. But from this opinion our own observation and experience constrains us to dissent. We insist that she should be allowed to stand idle until the sensation of her heat, or season, as it is sometimes called, subsides. After conception, every mare, if permitted to go free, will stand by a fence or tree in a dormant position, after her heat goes off. Now, if at this time she be overworked or scared, she will cast the conception, and will require to be served again. We need not explain the cause of this, as there is no remedy or preventive for it, only to let the mare have ease and peace, to allow nature to fulfill her allotted functions. There can be no doubt, however, that after a mare has been a few weeks with foal, moderate work will do no injury, but will rather be of service to her. She may do farm-work up to the time of foaling, but must never be placed in a situation where she will be at all likely to receive severe jolts, kicks, or any other violence. Another evil to the conception is turning mares out with string-proud, or badly castrated horses, to be teased by these pests. This is very pernicious to their conception. On this the farmer needs no theory, as the best preventive of the evil is good fences to keep these fellows away from his breeding mares.

Previous to the time of foaling there will be noticed a furrow-like fold on each side of the spinal bone extending from the tail to the haunch. This, and the increased size of the udder, or bag, are all the symptoms of approaching foaling that will be observed until about twenty-four or forty-eight hours previous, when there will be seen an adhesive substance protruding from each

teat, like drops of milk. This is a certain indication, and as soon as it is observed, measures must be taken to secure the safety of the foal, which will require that the mare shall be kept in a suitable place, where some careful person can look after her safety.

Recurring again to the subject of putting a mare we would remark that the virgin mare, or one which has not for one season had a colt, is to be put when she is found in season. But the mare that has had a colt will be found in season some time in the first month after foaling, and if it is desired to breed her again she must be put at this time. She should be put on the ninth day after foaling. Some say the eighth; but we think the ninth better. Others prefer the eleventh day; but it is dangerous to wait longer than this, for in nine cases out of ten the mare will have come off her heat, and will not receive the horse until too late for that season. The chief reason of this is, that suckling reduces the system of the mare too much to allow conception to take place, and thus a year's service of the breeder is lost. We have known many instances of this kind. After putting a mare, the days for trial are the ninth after service, the seventh after this, and the fifth after this again, making twenty-one days. Some return again, commencing with the ninth, and follow up as before, making forty-two days. But we insist that, as twenty-one days is the period elapsing between a mare's going out of heat and coming in again, making her periodical term thirty days, twenty-one days is sufficient to prove a mare.

Every breeder should be able to judge of the conception of a mare, which will require attention to the following points: After the first service of the horse, and before the next trial, on examining the vagina, or bearing, as some call it, if conception has not taken place, it will be of a fresh, bright, or florid and moist appearance, with a clear drop appearing at the lower part. and which, if touched, will incline to extend; but if conception is present, a different appearance of the surface of the vagina will be presented. It will be found dry and of a dirty brown or rust color, and a dark, brown looking drop will replace the former clear drop. When these latter appearances are present, pregnancy may be regarded as certain. They may be relied on as a sure criterion in the purchase of a mare alleged to be with foal.

Especial care should be taken of a mare about the fourth and fifth months of her pragnancy, and from this time forward. It is about this time when abortion is most likely to occur. Her feeding should be increased, as she cannot endure hunger. She has peculiar need of additional feed, as the rapid growth of the embryo is a material tax on her system, calling for an increased quantity of nutriment. There are two animals to support on the food of one. This must not be overlooked, or abortion will often be the consequence. Another cause of abortion, which we will mention, is showing a mare food which she

likes, and has been in the habit of eating previous to this time, and not letting her have it. Seeing or even smelling such food is dangerous. We saw a mare taken to a mill in the month of November, and hitched on a floor near a heap of bran, which she tried very hard to reach, but could not. Soon after being taken off the floor, she took sick and had a visible appearance of abortion; but a veterinarian who was present, and had seen the whole transaction, took some of the bran and fed it to the mare, and the spasms, or throes, left her, and never returned again until the full term. We have known other similar instances. Feeding hogs by the place where mares not grain-fed are kept, is ultimately dangerous.

If a mare once slinks her colt, she will be very likely to do so at the same period of her pragnancy the next year, and continue the habit, especially if anything like the same provocation occurs. But if she slinks, or aborts, from a hurt, a strain, or some disease, she will not be so liable to continue it as a habit.

If a mare is in the habit of slinking her foal, she should not be kept in the same lot with other breeding mares; for, though it may seem very strange, the act of one mare slinking will be almost certain to cause the others to do the same. This is the result of sympathy—some writers say of imagination. We rely for its explanation on that great sympathy whose delicate and mysterious chain binds not only the different organs of the same animal, but reaches out even to others of the same species, or even of different species, particularly if in close contact, so that an impression made on one does not stop with itself, but finds a response in the others. The nervous system is the medium through which this sympathy acts, and as this is always exalted in its sensibilities during pregnacy, we might reasonably expect such a result as abortion from sympathy. Imagination, in deed, may produce abortion, but by an entirely similar impression on the nervous system to that produced by fright. Hysteria is a disease of the nervous, spasmodic characted, generally resulting from the sympathy of the uterus, or womb, with other organs, especially the stomach. The nervous system here is the medium through which the morbid impression is transmitted, and this peculiar organ is susceptible of being affected even by mental impressions.

CHAPTER XVI.

Raising the Colt.

INSTRUCTIONS HOW TO FEED, CARE FOR, AND TRAIN.

Under this head we shall treat of the management of the colt from the time it is foaled up to the time it is taken up for breaking, or training. There is but little to be said on this subject, though there are very important matters involved in it. After the colt is foaled, the mare should be allowed to stand idle for three or four weeks, until she comes to her milk. She also needs rest to allow her carcass to resume its proper shape and strength, which must necessarily have been considerably weakened by carrying the foal and foaling. The foal is also tender, and needs time to allow its limbs to acquire proper shape and strength. It should have as little traveling as possible to do; though it should be allowed to run with the dam on the farm, so that it may draw the milk often, which will increase the quantity, as well as enable the colt to get it while fresh, which is much more wholesome to it that stale milk. Though the colt should be allowed to run with the dam on the farm, it should not be allowed to follow her to market, or other places, over hard roads, for in this way it will be very apt to start impeniments, such as ring-bone, spavin, hoof-bound, curb, or splint.

There is no period of a horse's life at which bad treatment will have so injurious an effect as at this. And what is here lost by carelessness or neglect can never be regained by any subsequent good attention. If it is desired to have a good, stout, well-shaped horse that will attain his natural growth, both the dam and colt must be well fed and protected from foul weather and severe storms. The proof of the old adage, "half stock, whole profit" is here realized. Nothing is ever made of any stock by starving, and much less of the horse than any other animal. Where shape and performance, or durability and ac-

tion are required, if the young colt get a start by good feeding and care, it will be easy to keep him up until his training, at three or four years old, when his superior qualities will abundantly repay all former trouble. If poorly fed and illy used, there is seldom anything made.

At five or six months the foal may be weaned, if its size and strength are such as to indicate that it is able to do without the milk. It should be put in a distant pasture, where it will have no opportunity of seeing the dam. It must now be closely looked after, so that it may be well prepared to begin its first winter. Oats and bran should be allowed in liberal quantity. It would be better to have the oats bruised. Generous feeding is the true principal of economy in this case.

But the colt should not be rendered delicate by too close confinement or stabling. He wants the free use of his limbs out of doors to develop their strength, and the free access of air into the lungs to properly ventilate his blood. This too, is the most suitable time to commence the cultivation of that attachment to and confidence in man which gives rise to that implicit obedience which characterizes the horse above all other animals. Harshness and cruelty at this period are particularly injurious. The colt should be frequently handled by those feeding him, and even tied up, after becoming habituated to being led about by the halter. Early impressions on the horse, as well as on man, are the most enduring.

The proper time for castrating a colt depends to so great an extent on the purpose for which he is intended, his shape of neck and head, his breed, etc., that any one age cannot be put down for this operation; though, from the practice of our farmers, one would suppose that it is a matter of no consequence at what age the operation is performed. As a general rule the age of four or five months, for the farm or general purpose horse, will be found proper. But some regard should be paid to the weather, which should not be too hot, nor the flies very numerous. A horse intended for heavy draught or the carriage may generally be castrated at the age of one year, but if too light in the withers, inclined to be ewe-necked, his form will be materially improved by not castrating him until the fall, after he is a year old. But if a colt shows too large a head and is too heavy in the jaw, the earlier he is castrated the better.

Some young horses are found to have crooked pasterns. This difficulty commences to develop itself at one year of age. It is caused by the side of the hoof growing thin and extending to one side. Generally, if the hind-hoof, it extends to the inside, but if the forehoof, to the outside. When the pastern is thrown outward, it is called pigeon-toe; when inward, it is called officer toe. The extending inward of the hind-hoof is called dish-hoof.

The difficulty can be remedied by turning up the foot and paring down and thinning the side which extends too far. But if this does not answer the purpose, put a half shoe on the side toward which the pastern inclines. This will throw the pastern in its proper position, and correct the difficulty. We have often succeeded by these measures in bringing the hoof straight, and, consequently, prevented a crooked pastern in the growing animal. The foot will most certainly be distorted if this difficulty is neglected.

CHAPTER XVII.

DISEASES OF CATTLE.

Their Causes; How to Know Them; What to Do.

In the diagnosis of disease, and the administration of medicine, allowance must be made for a nervous temperament, which usually renders an animal more impressible; for habit, or continued use which tends to decrease the susceptibility for individual drugs, for idiosyncrasy, which can only be discovered by observing the action of the agent on the particular subject, and for the influence of disease when that is likely to affect the action. Thus, in most diseases of the brain and spinal cord, and in some impactions of the stomach, double the usual quantities of purgative medicine will be necessary; while in influenza, and other low fevers, half the usual doses may prove fatal. In acute congestion of the brain, stimulating narcotics (opium, belladonna, hyoscyannus) would aggravate the symptoms, etc.

FREQUENCY OF ADMINISTERING.

Anodynes, anti-spasmodic, narcotics, sedatives, and stimulants, may generally be repeated once in four or six hours in order to maintain their effect. Alteratives, disphoretics, febrifuges, refrigerants, and tonics, may be administered twice daily. Purgatives should only be given when necessary, and should never be repeated until from the lapse of time we are assured that the first dose remains inoperative. Thus, unless in urgent need, a horse should not take a second dose of physic under thirty-six hours after the exhibition of the first; and in all cases, until the medicine had worked off, he should be kept at rest and allowed only warm mashes and water with the chill taken off. In ruminants a second dose may be ventured on in twelve or sixteen hours, and in carnivora

(dogs, etc.) and omnivora (swine, etc.) in from seven to ten hours. Emetics shound be given in full doses, and repeated in five or ten minutes if they fail to take effect, their action being further provoked by copious draughts of tepid water.

FORMS OF DOSES.

Drugs may often be given as a powdered solution in the food or water; they may be made into a soft solid with syrup and linseed meal, rolled into a short cylinder and covered with soft paper; they may be converted into an infusion with warm or cold water, or into a decoction by boiling; or they may be powdered and suspended in thick gruel or mucilage. They may be given, in a liquid form, from a horn or bottle; or, as a short cylinder or pill, which may be lodged over the middle of the root of the tongue; or, as a sticky mass, they may be smeared on the back of the tongue; may be given as an injection into the rectum; or finally, in the case of certain powerful and non-irritating agents, they may be injected under the skin.

No agent should be given until sufficiently diluted to prevent irritation, if retained a few minutes in the mouth, and irritants that will not mix with water (oil of turpentine, croton oil, etc.,) should be given in a bland oil, in milk, or in eggs after being thoroughly mixed.

HOW TO GIVE MEDICINE.

Few things are so awkwardly done, as a rule, as giving medicine to farm animals. In the hands of a careful and expert person, a strong glass bottle is good. A better instrument is a flattened bottle of block tin, which for cattle should hold two quarts. The most usual instrument, and on the whole the best for ordinary operations, is the horn. Select one of which the point turns down and the large end up; form this of the proper size and fashion so the opening will be oblique.

Drenches should always be thoroughly mixed, and well shaken before they are given. If a fit of coughing ensues, free the animal at once and until it be ended. In operating with cattle do not irritate the animal unduly. Always operate from the right or off side. Pass the left hand over the head, and in front of the horn, seize the upper jaw firmly in front of the grinders, turn the head firmly back, the operator standing well braced, the back firm against, and as well forward of the shoulders as possible. Thus having the animal with one side against a wall, or the side of the stall, it must be a very vicious cow or bull that a strong, expert man cannot handle. If, however, the operator does not stand well forward and well braced, he may be severely kicked, since an ox, like a deer, can reach well forward with their hind feet. The usual quantity

for an ox is from one to two quarts at a dose, if liquid, of ordinary decoctions and solutions.

INJECTIONS, OR CLYSTERS.

A large number of medicines, both liquid and solid, may be as easily administered per rectum as by the mouth. In administering injections, it is not necessary that much pressure be used. The intestinal canal of animals is lower than the opening. Thus fluid substances will fall by their gravity. A good instrument for use may be a pail, with a tube extending from the bottom connecting with a half-inch rubber hose, of suitable length, so that the pail may hang just high enough above the animal to be out of their reach in moving about. Oil the end to be inserted into the rectum, and the fluid may be passed into the gut, as much or as little as may be desired, and with much better effect than when strong pressure is brought to bear on the fluid.

When solid substances are administered per rectum, they are called suppositories. They are often useful and simple, as in the case of a small cylinder of soap for young calves, to encourage the action of the bowels and ducts; and in the case of cows, in the use of disinfectants, to purify the discharges and lessen the danger of puerperal fever; suppositories are made into form by means of soap, starch, lard, etc.

VAPORS, SPRAYING AND FUMIGATION.

These are medicants drawn in with the breath. Chloroform and ether may be administered by means of a sponge filled with the agent and held to the nose. Vapors are easily produced from liquid substances by means of an atomizer, sold by all druggists.

Steaming is often of great benefit. A hot bran mash, in a nose bag, readily gives off steam.

FOMENTATIONS.

These are applied by wrapping the part to be treated with flannel bandages or woolen cloth, and keep the wrappings constantly wet with hot or cold water, or mixed with any appropriate addition as vinegar, laudanum, etc. They are used to cleanse or soothe irritable wounds, to reduce internal inflammation, or relieve external inflammation. Unless persistently used for hours and kept constantly wet, they had better not be attempted. After the operation is finished, rub dry and clothe warmly, to prevent chill, which will surely occur. As an additional precaution, a little mustard rubbed in would be beneficial. When it can be applied, a sheepskin with the wool on wrung out of hot water, makes a good agent for fomentation.

RECOGNIZING AND DISTINGUISHING DISEASES.

The following explicit and detailed rules for recognizing diseases in animals, should be carefully studied. Anyone who would become expert in recognizing diseases in animals, must study them carefully in the healthy state, and make himself thoroughly familiar with their habits, appearance and general physiology. He must practice feeling their pulse and the heart, listening to the sounds of their lungs in breathing, and taking their temperature, by feeling the skin and also by using a properly constructed thermometer. He should watch the appearances of the eye and tongue, and note the positions assumed when asleep and awake. He should observe the character and frequency of their appetite. For it is in the variations from health in these particulars that the veterinarian discovers the guides which lead him to the recognition of the particular disease he has to treat. We assure our readers that if they will verify our statements by practice on the living animals, they will soon be in a position to take charge of them when sick, quite as well and often a great deal better than the average veterinary.

THE PULSE.

The pulse differs very much in the domestic animals. In the full grown horse at rest, its beats are about forty per minute; in the ox from fifty to fifty-five; and in the sheep and pig, about as in man, that is, averaging seventy to eighty beats in the minute. In calves and colts, and in animals well advanced in years, the pulse increases, in health, to about twice these figures; and it is also increased by hot, close stables, full feeding, and the condition of pregnacy.

The pulse may be felt wherever a considerable artery passes over a bone. It is ususally examineb in the horse on the cord which runs over the bone of the lower jaw, just in front of its curved portion; or on the bony ridge extending upward from teh eye, or inside the elbow. In cattle conveniently reached over the middle of teh first rib, or beneath the tail. There is a marked difference of force in the pulse of the two species; that of the horse being full and rather tense, while in the ox it is soft and rolling.

When the pulse differs materially from these conditions in any direction, it is a sign of disease. If rapid, full and hard, there is high fever or acute inflammation; if rapid, small and weak there is low fever, loss of blood, or weakness. If very slow we may suspect brain disease; if irregular, now fast and in a few seconds slow, we should look for a diseased condition of the heart.

In the sheep, the pulse if felt by placing the hand on the left side, where the beatings of the heart can be felt; or at about the middle of the inside of the thigh, where the femoral artery obliquely across the bone.

THE BREATHING

The breathing is next in importance. If the ear is applied to the throat of a healthy horse or ox, the air will be heard passing through the windpipe with a regular, stady, blowing sound; if applied to the chest a soft rustling murmur will be heard, like a gentle breeze in the tree tops, caused by the air passing in and out of the fine tubes and vessels of the lungs. But where the lung or throat is diseased, these sounds are very much changed and in many directions, which it is not necessary to dwell on here, but which will at once indicate the presence of something amiss with these important organs.

If the forefinger of the left hand is placed firmly on the chest and smartly tapped with the ends of the three first fingers of the right hand, the sound will be noticed to be more resonant and clear than when the same procedure is practiced on the solid thigh. This is because the lungs are not solid, but are always in health, well expanded with air. But in various diseases, as pneumonia and pleurisy, they fill up with fluid and become solid, then the sound given out, by thus percussing them, as it is called, is like that on any other solid part of the animal. Hence this in another very important indication of disease.

By practice on healthy animals the character and boundaries of these sounds can be learned so closely that any variation from them will be at once detected, and will sometimes reveal the presence of an unsound condition when nothing else will.

The rapidity with which the act of breathing is performed can easily be counted by the heaving of the chest. In health in the adult horse at rest it is from eight to twelve times a minute, and in the ox a little faster. Any great increase without obvious cause, is a positive sign of diseased condition.

THE ANIMAL HEAT.

The temperature of animals can be ascertained, to a slight extent, by the feel of the skin, the ears and the legs. A hot, dry skin in a horse generally accompanies a feverish condition. Cold ears and legs are a sign of serious disease. But the only scientific, that is accurate plan, is to use what is called a "clinical thermometer;" that is, one, the bulb of which can be bared in the rectum. After it has remained there two or three minutes, the mercury will accurately indicate the temperature of the blood. This in health is 98 degrees, and any deviation from this, even of a few degrees, is a certain sign of disease.

Thus it has been found that every disease has its own degree, a temperature at which it is either favorable or fatal. For example, in that sometimes prevalent epidemic among horses, cerebro-spinal meningitis, the thermometer rises as high as 104 degrees, it is a certain indication that the horse will shortly die;

while in such a disease as inflammation of the lungs, the mercury will register 108 degrees, or 109 degrees, and the horse recover. If in gastric or typhoid fever the heat has been 103 degrees, and falls to 100 degrees, and then suddenly rises again to its previous figure, the chances are terribly against the patient, no matter what the other appearances may seem to say. These few examples will serve to show how valuable the instrument may become in the hands of an intelligent person.

THE SKIN AND THE HAIR.

The skin in its general feeling and appearance is an important guide to the condition of an animal. A dry, scurfy appearance is a symptom of indigestion, and liability to joint affection. What is called "hide bound" is a symptom of a general state of poor nutrition, arising from indigestion, improper food, worms, or a want of proper exercise. The skin feels stretched and hard, as if too small for the body. The condition known as "staring coat," when the hairs stand out like bristles, is often the only symptom of a low state of health. Whenever an animal is disposed to shiver, with shedding of the coat, when exposed to moderate cold, or without such exposure, it is on the edge of some disease, often indicating the approach of an attack of farcy or glanders; and when with this are repeated shivers or chills, we may expect the strangles, weed, or other diseases with suppuration. When in an attack of disease the skin becomes covered with cold sweat, the life of the animal is in great danger.

THE POSTURE.

The position of an animal, its mode of standing and lying down, are all significant. Lying persistently on one side, or obstinately maintaining one position, shows that any other is painful. Horses stand as long as they possibly can, as they breathe much easier in the upright position; and if they once lie down, they soon despair and die. Hence the rule is with a horse to sling him up, in various ailments. With cattle it is different, and it is much less important to keep them erect. When animals cannot rise, it may be from weakness, or from palsied limbs, or from severe injuries or sprains.

INDICATION OF PAIN.

The feeling of pain in animals in indicated by their flinching when the painful part is touched; by the care which they take in lying down, walking or standing to "favor" the part, and by the appearance of the eye. Distress and suffering are generally plainly apparent in the face of sick horses and cattle.

SPECIAL SIGNS IN CATTLE.

In cattle, the horn at its root yields, by the sensation it imparts to the hand,

a rough idea of the temperature of the blood. If the temperature is natural, there is no fever; if cold, and the tips of the ears also cold, it is a sign of some serious internal congestion; the blood no longer circulating in natural force through the extremities.

The muzzle is another part to take note of. In health this is moist, covered with "dew," as the saying is; but in disease, especially fever, it is dry, hotter or colder than natural, and sometimes changed in color, paler or injected with blood. By looking at the flanks, the regularity of the respiration is noted, rapid and irregular heaving there betraying the disturbance of the important function of breathing. In ruminants also, the second mastication of the food is among the first of the vital processes to become disturbed in disease. When a cow or an ox "loses the cud," as it is called by herdsmen, that is, ceases to ruminate without apparent cause, there is sure to be a feeling of sickness about the animal which is thus interfering with one of its processes of digestion. No animal can thrive in this condition; it needs attention.

CHAPTER XVIII.

Gestation, Diseases and Accidents Thereof.

WHAT TO DO DURING GESTATION.

As a rule the cow should be dried about the sixth or seventh month when stock breeding is the object. When milk and not calves is the object, the flow may be continued to within six weeks of calving.

Grazing should always be allowed as much as possible, the exercise and grass both being favorable to healthy gestation. In winter the food given should be nutritive, easy of digestion, cooling, and of such quantity as not to induce either constipation or undue laxity. Water should be especially pure and plentiful, and not excessively cold; in fact, all frozen food is to be avoided. Cleanliness is essential. Harsh or cruel treatment, running by dogs, all danger of fright must be avoided. Surgical operations and severe medication is to be avoided, especially drastics.

BIRTHS.

As a rule in natural parturition there is nothing gained by undue haste. The animal should have quiet and be left to itself so long as everything is going on tolerably well. In the majority of cases nature will assist herself to a safe delivery. A roomy stall, in winter well warmed, should be provided with rather thin but compact bedding. In summer, or other mild weather, let the cow be out of doors by all means; in a small grass lot is best.

PROLONGED LABOR.

When the labor is prolonged from excessive size of the foetus, and this is suspected beforehand, or if time do not press and there is no special excitement in the cow, and there is delay in the descent of the calf, oil the hand and arm and feel for the neck of the womb in the vagina. If it be rigid carry ex-

tract of belladonna up the vagina and smear the neck of the womb for a few times. This should cause relaxation of the parts. If the time is passing carry a narrow-bladed, blunt-pointed knife in the hand in the vagina; find the mouth of the womb with the forefinger, slip the knife along the finger until it enters the neck of the womb about a quarter of an inch, and make a slight cut in all four sides of the neck by turning the knife. A slight nicking will suffice, since the mouth once loosened in its contraction, the neck will give way, and the bag of water will accomplish the rest. The utmost care is needed insuch work, however.

LARGE PRESENTATION.

Sometimes the calf is so large that the musclar efforts of the cow can not force the mass forward. In this case do not resort to strong means until all other fail. Let a small-handed man introduce both hands, well oiled, up the vagina, carefully working forward beside the calf, gradually pressing apart the orifice; pass closely to the calf with the hands, and as the pains commence, pull forward as strongly by pressure against the foetus. When a main effort is made pull forward, and at the same time slip the hands slowly back, and the calf will often follow. Repeat this again and again as the pains are renewed.

UNNATURAL POSITIONS OF THE CALF.

These are various and resort should be had to a veterinary surgeon.

RETENTION OF THE AFTER-BIRTH.

There are many causes leading to this. The most common of these are hurried deliveries, adherence of the after-birth to the walls of the womb, and poverty of the animal. Retention for two or even three days under ordinary circumstances is not especially serious. If left to putrify, fetid discharges will exhaust the animal. The blood is poisoned, and the animal either dies or remains unhealthy for life. After forty-eight hours, if trouble still exists, the hand and arm well oiled should be introduced, and the after-birth carefully separated from the walls of the womb by picking with the fingers and nails, and gradual but firm pulling. The whole having been completely removed, syringe the vagina thoroughly with the following:

1 Oz. Chloride of lime,
1 Qt. soft water.

Give the following as a physic:

8 Oz. Epsom salts,
½ Oz. Ginger pulverized,
¼ Oz. Caraway seed pulverized,
2 Drachms Copavia.

Give as a drench. If there is a tendency to bleeding, give the following:

2 Oz. Ergot of rye, powdered.

TEMPORARY PARALYSIS.

Cows are frequently paralyzed in their limbs before parturition. If they do not regain the use of their limbs soon, or if they improve slowly, give the following:

2 Drachms powdered nux vomica,
2 Drachms sulphate of iron.

Give in a pint or two of gruel twice a day. Avoid all so-called cleansing drinks; they are generally injurious. When there is unusual debility the following will be indicated:

1 Oz. powdered anise seed,
1 Oz. powdered myrrh,
1 Oz. powdered allspice,
1 Oz. powdered cummin seed.

To be stirred in a quart of warm gruel as a drench.

If constipation is strong and persistent give:

½ lb. sulphate of magnesia,
1 Oz. ground anise seed,
6 Oz. olive oil.

Give in a pint of gruel, and repeat daily if needed.

If there is strong relaxation with continued diarrhoea, the following will be indicated:

2 Drachms powdered catechu,
1 Oz. powdered ginger,
30 Drops sulphuric acid,
1 Oz. laudanum.

Give in a quart of gruel, ale or weak whisky and water.

TREATMENT OF CALVES.

The Calf's First Need. Every new-born calf needs early cleansing by the licking of its dam. If this is neglected, it may be induced by sprinkling salt on the calf. If after the naval string is severed (which the cow does with her teeth) it should bleed, it must be tied with a strong thread. If there be inflammation at the navel a mollifying ointment may be used; if a tumor appear, it may be lanced and poulticed. The mother's milk is the best norishment for the

young calf. It also furnishes needed correction and regulation for the bowels and other organs.

Diarrhoea, etc. Affections of this nature destroy many calves. Unsuitable food may induce it, or overheating of the dam. Two ounces of castor oil containing one teaspoonful of powdered ginger is a valuable corrective. It should be followed by gentian root tea mixed with two ounces of lime-water, a pint being given three or four times daily. Where this treatment and attention to the diet of the mother and calf fail, resort may be had to strong teas of oak bark, or willow bark, with ginger added in either case.

EPIZOOTIC.

Epizootic aptha, is generally known as foot and mouth disease. Although a contagious febrile disease occurring in cattle and sheep, and communicable by transmission to swine and even man, it is fortunately rarely fatal, and is characterized in animals by an eruption of small blisters in the mouth, and between the clefts of the hoofs, and along the upper margin of the coronet. It is a specific poison of obscure origin, remaining in the system from one to four days before producing its characteristic symptoms.

How to Know It. There is an increase of temperature in the body, followed by an eruption of small blisters, of the size of a dime, situated on the tongue, the roof of the mouth, inside the lips, and occasionally on the udder. The blisters in the cleft of the hoofs and around the coronet and heels, are identical with the others, but smaller.

When the disease is mild, it is easily cured by daily applications of a portion of the following, applying by means of a swab or sponge:

2 Oz. powdered golden seal,
1 Oz. tincture of matico,
4 Oz. honey.

When the disease is violent and of long standing, it is apt to extend through the whole course of the ailimentary canal. The method of cure, in this event, is by tonics and astringents. The remedies are tincture of matico, golden seal, and sulphur, in the following proportions:

4 Drachms tincture of matico,
2 Drachms sulphur,
2 Drachms powdered golden seal,
1 pint water.

The patient's diet should consist of oatmeal gruel, slightly alkalized with hyposulphite of soda.

MALIGNANT CATARRH.

Caused by feeding in damp, cold situations, and feeding on marshes in peculiar seasons. Low, wet river bottoms are most subject to give it to stock; a fetid saliva drivels from the mouth and a stinking diarrhoea succeeds costiveness. Death ususally ensues from the eighth to the tenth day preceded perhaps by convulsions or signs of suffocation.

The treatment is to clean the bowels with the following:

1 Pint olive oil,
1 Oz. laudanum.

In eight or ten hours, if it do not operate, give another. Follow this with diuretics, sweet spirits of niter in half-ounce doses, and also with antiseptics, potassa chlorate, in doses of one-quarter drachm. Wet cloths should be kept on the head; the mouth and nose sponged with quite a weak solution of carbolic acid. Give as food only soft mashes.

LICE ON CATTLE.

All cattle, and especially those in poor condition, are liable to attacks of lice of various species, which will propogate very rapidly, soon infesting other stock and even the stables and barns themselves. Treatment must, therefore, be directed promptly at the animals, and their surroundings also. Stables should be cleaned and whitewashed. Their scratching places should be coated with petroleum or coal tar.

For treatment of the cattle, poisonous substances must be shunned carefully, as their habit of licking themselves would result in their injury. One of the simplest preparations is a strong solution of tobacco leaves saturated with rock salt. This may be applied thoroughly on several occasions at intervals of three or four days. Repetition is necessary to the extirpation of the young, which may be hatched after the first application. If alcohol be used in the decoction of tobacco leaves it will destroy the nits as well as the lice, and prove the quickest relief from the pests.

4 Parts linseed oil,
1 Part common creosote.

A good preparation which will remain well upon the hide is this:

An ointment of cayenne pepper or Scotch snuff mixed with hog's lard, well rubbed in, will be found very effective. Especially look out for vermin in young stock, or stock in poor condition.

FOULS IN CATTLE.

Foul claw, or foul in the foot, is a disease characterized by inflammation

and suppuration of the substance in the cleft of the hoof. Sometimes it extends to the entire foot, and even includes the whole leg, causing fever, failure, and death in some cases. Usually it affects the hind feet. Foreign substances between the claws, excessive weight and strain upon the foot, or a scrofulous condition of the system may cause this trouble. Its best treatment consists of careful cleansing of the sore; poulticing, if much inflamed, and astringent applications. In cleansing, a syringe may be needed, using a solution of carbolic acid. Cloths saturated with the solution should be pressed into the opening and bound there. A clean stable, or a dry pasture ground are essential. For a wash, use:

Carbolic acid, one drachm,
Water, six ounces.

For an ointment, use:

Oil of turpentine, four ounces,
Lard, four ounces;
Powdered sulphate of copper, one ounce.

HORN-AIL, OR HOLLOW HORN.

What is popularly known by these names is not a disease originating in the horns or located there. A peculiar coldness of the horns is one of its symptoms, but the cause of the disease is a degenerated condition of the blood, resulting from other diseases, or from exposure, foul air, unclean stables, poor food, bad water, etc. Uniformity of food may produce these ill conditions.

General debility, loss of flesh, rough, lousy hide, loose or constipated bowels, whiteness of tongue and cold horns are the usual symptoms.

All local treatment of the horns is worthless. Good food, cleanly and comfortable housing and treatment for vermin if they be present are the first requisites. Cleansing the bowels and tonic treatment are then in order.

Use for one week daily in dry food, the following:

Sulphate of iron, two drachms,
Powdered nux vomica, one drachm,
Powdered gentian, one ounce.

DIARRHOEA, DYSENTERY, ETC.

See Chapter 5.

COW-POX.

This disorder is akin to small-pox in man, though it is far less to be dreaded.

It sometimes appears without discoverable cause, but inoculation or contact with the disease is regarded as essential to its propagation. It begins with slight fever; pimples then appear on the teats, udder and belly; the milk diminishes, the cow droops and its appetite fails. It is not uncommon for several crops of pustules to form, break, and dry up. The sick animal should be isolated and subjected to a mild, sedative treatment, keeping the bowels free but not loose.

CHAPTER XIX.

DISEASES OF SHEEP.

LOCK-JAW.

This is produced from a variety of causes, among the more common, being inflammation of the membranes from improper gelding, injuring the hoofs, horns, etc. The animal is unable to walk, or only so with difficulty; the jaws are set, and death ensues in a short time. Warmth, and quiet is recommended and give one-half to three-quarters of an ounce of castor oil, according to the age of the sheep, the disease being confined mostly to lambs, and sheep after gelding. Follow the dose of castor oil, in half an hour, with ten grains of opium, and at the end of an hour, give another ten grains of opium if a decided sedative effect is not produced. Epilepsy is a kindred disease, in fact tetanus is considered to be an aggravated state of epilepsy. The remedial means will be the same.

PALSY.

This is the opposite of epilepsy. The sheep is unable to move its limbs. It is supposed to be produced by cold and improper treatment. It is rare in this country. Take the lamb to a warm place, give it warm gruel, with a little ginger mixed in it. If a purgative is indicated give:

2 Oz. Epsom salts,
½ Drachm ginger.

Mix in half pint of ale or water; to be followed by two drachms of laudanum in an hour.

THE SCAB.

This is produced by a minute, almost microscopic insect which burrows under the cuticle, producing intense irritation, the escape of serum, and which drying, brings off with it wool and all, and spdearing with great rapidity, soon infests the whole flock. The tenacity of life of these insects is so great that a scabby pasture has been said to spread the contagion after three years. The prevention of infection should be imperative with every flock master.

How to Know It. The sheep is restless and constantly rubbing itself against posts and other objects it can get near. It bites itself with its teeth, and scratches itself with its hoofs. Soon the fleece becomes ragged and begins to fall out, and the animal appears wretched and unsightly, and at length dies.

What to Do. The remedies are both liquid and oily. A good dip, and one regarded in England as most effective, is the following:

3 Pounds arsenic,
3 Pounds pearl ash,
3 Pounds sulphur,
3 Pounds soft soap.

Mix in ten gallons of boiling water, stir, but avoid the fumes, and add ninety gallons of cold water. Prepare a tank that will easily allow a sheep to be dipped, having a slanted, slatted drain at the side, tight bottom underneath to allow the drip to run back. Dip the sheep, back down, being careful not to allow the head to enter the poisonous mixture, letting the animal remain one minute. Lift on to the slats and rub and squeeze the wool, until pretty well drained, and place in a yard until dry. When dry, go over the flock again, as to the heads, with the following:

1 Pound mercurial ointment,
6 Pounds lard,
1 Pound rosin,
½ Pint oil of turpentine.

Mix the mercurial ointment with the lard by heating gently and stirring. Dissolve the resin in the turpentine and rub all together when the lard is cold. Part the wool on the head between the ears, on the forehead, along the neck and under the jaws, and rub in the ointment.

In the United States, tobacco is often used in the place of arsenic; if used, substitute ten pounds of strong tobacco leaves for the arsenic in the formula as given above.

A formula in great repute among Australian shepherds, is the following:

1 Pound tobacco leaves,
1 Pound sulphur,
5 Gallons water,

Boil the tobacco in the water, then add the sulphur.

The sheep is dipped in this solution while quite hot, and retained in it four or five minutes, its head being from time to time thrust under so as not to enter the eyes, nose of mouth, and the wool pressed and dried as before stated.

DISEASES OF THE LIMBS AND HOOFS—FOOT ROT.

This is an infectious disease often aggravated by grit and dirt increasing the inflammation.

The first symptom is the disappearance of the naturally smooth, dry, pale condition of the skin at the top of the cleft, over the heels. It becomes somewhat red, warm and moist, and slightly rough or chafed. Next, the moisture increases to a discharge, and an ulcer is formed which extends down to the upper portion of the inner wall of the hoof. These walls are then attacked, becomes disorganized and the disease penetrates between the fleshy sole and the bottom of the hoof. The hoof is thickened at the heel by an unnatural deposition of horn. The crack between it and the fleshy sole pours out an offensive and purulent matter. Soon all parts of the foot are penetrated by the burrowing ulceration, the horny sole is disorganized and the fleshy sole becomes a black and swollen mass of corruption, shapeless, spongy, and often filled with maggots. The fore feet are usually first attacked; lameness is early noticed and soon becomes complete; the appetite is lost, and the animal dies from exhaustion. The offensive odor of the true foot rot is characteristic, and once made familiar will serve as a certain guide in recognizing the disease. The disease may present itself in a malignant and rapid form, or in a mild one. The first attack on a flock is generally of the severe character. When it is kept under the first year, its appearance the next summer will be mild; and the third season still milder.

How to Cure Rot. Every part of the diseased structure must be cut away, cleaning the knife from time to time. This thoroughly accomplished, prepart a tank, which is to be filled to a depth of four inches, with a strong, saturated solution of suphate of copper, blue vitriol; let each sheep stand in this, heated as hot as they can bear, for ten or more minutes, keeping the whole hot by occasionally splashing a piece of heated iron in it, or adding a quantity of the solution boiling hot. It is also well to cover the hoof with chloride of lime, and fill the cleft of the hoof with a piece of tow long enough so the ends can be twisted into a cord to be fastened around the fetlock. This makes a good bandage. The hoofs should be examined daily for some time and the chloride re-

newed if necessary. Keep the sheep in a dry, well-littered yard, or on a dry, short pasture, and feed well. If the case is bad, the following tonic given internally will be necessary:

2 Drachms common salt,
½ Drachm sulphate of iron,
½ Drachm nitrate of potash,
Mix as a powder and give daily.

FOULS AND TRAVEL SORE.

These may be cured, the first by washing the cleft of the hoof with warm water and applying a strong solution of blue vitriol, and the latter by touching the thin places in the hoofs with a feather dipped in oil of vitriol, and smearing over with tar. Or, better, prepare the following lotion and use occasionally:

1 Part solution of chloride of antimony,
1 Part compound tincture of myrrh.

GRAVEL.

Sheep often become graveled. If lame in the least examine them, and cut the horn of the hoof to expose the gravel; extract it and cover the wound with tar.

THE BIFLEX CANAL.

The issue as it is called (biflex canal) in the front and upper part of the hoof, sometimes becomes irritated and swollen. Do not follow the advice of ignorant persons and "cut out the worm." If any thing is embedded therein, extract it. If simply swollen and inflamed, and perhaps ulcerated, lance it in two or three places slightly and dress with compound tincture of myrrh.

MAGGOTY SHEEP.

Often in hot weather, from one cause or another, flies will lay their eggs, either in a wound, or, if the sheep is dirty, in the accumulated dung about the thighs. The prevention is cleanliness. Keep the sheep well tagged, that is shear the wool from under the sides of the tail, and diagonally thence some ways down the thighs. If maggots exist they must be taken out, and the wounds touched with

1 Part creosote,
4 Parts alcohol.

An afterwards bathed daily, until relieved, with tincture of myrrh.

OTHER DISEASES—LUNG-WORMS.

This disease is caused by the presence of worms, the **strongulus filaria**,

which sometimes make their way into the lungs, but are usually found in the windpipe and bronchial tubes and bowels of sheep. If there is dysentery, with fetid stools, examine the evacuations and the mucus of the mouth and throat for indications of the worms. If there is a husky cough and quickened breathing; if the sheep rubs its nose on the ground; if it lose its appetite and flesh, prepare the following:

6 Oz. sulphate of magnesia,
4 Oz. nitrate of potash.

Pour on these three pints boiling water, and when the solution is milk warm add:

4 Oz. oil of turpentine,
½ Oz. bole armeniac.

Mix well and give two or three tablespoonfuls every other day.

When worms are supposed to prevail, the following may be made into twelve doses, one to be given once in two weeks, as a preventive:

2 Oz. oil of turpentine,
2 Oz. powdered gentain,
2 Oz. laudanum,
Dissolve in a quart of lime water.

This is enough for twelve sheep.

INTESTINAL WORMS.

The presence of intestinal worms and other parasite affections may be often found if shepherds would take the trouble to dissect a dead sheep. When found in one, the presumption is good that many are affected, for these parasites seldom appear in individual cases only. As a prevention when feared, plenty of salt should be allowed, and then the following preparation to be given once in two weeks:

2 lbs. common salt,
1 lb. sulphate of magnesia,
½ lb. sulphate of iron,
½ lb. powdered gentain.
Mix.

This is sufficient for 80 to 100 sheep to be given in ground feed.

THE ROT, OR LIVER-FLUKE.

This is a disease caused by flat worms (**Fasciola hepatica**) in the liver. If

by rubbing the skin of a sheep backward and forward at the small of the back, as taken between the thumb and fingers, it is soft and flabby and there is a crackling feeling in the fingers, as if there were water underneath; if there is weakness and tenderness about the loins; if the belly swells and the eye becomes jaundiced; if there is a diarrhoea, a weak heart and general stupor, and no veterinarian is near, isolate the animals in a high, dry pasture, give abundant and nutritious food and prepare the following:

½ lb. sulphate of magnesia,
3 Drachms oil of turpentine.

Mix for a drench, and give every two days, one-third of the quantity at a dose.

CHAPTER XX.

DISEASES OF SWINE.

MALIGNANT EPIZOOTIC CATARRH.

This disease, if it does not originate in filthy yards and putrid pens, is amazingly developed there. The poison germs find a congenial home in the mucous membrane of such hogs, and in those whose skins are so dirty that the natural perspiratory acts cannot take place, so if perspiration be checked during the prevalence of this epidemic, or the swine be exposed to sudden changes or the chilly air, it will surely predispose them to attacks.

How to Know It. There is a short, hoarse cough, difficulty of breathing, with panting of the flanks. The head is held in a stretched and drooping position; there is fever, a stiff, tottering gait, sometimes running at the nose, often efforts to vomit, generally constipation, but at times diarrhoea. In this form the disease is shown in the dead animal by inflammation of the lining membrane of the nose and upper parts of the throat, thence to the windpipe and lungs, which are more or less solidified.

A second form of this disease has a short cough, not so pronuonced as in the first form, and there is less oppression in breathing, but there is more decided paralysis in the hind quarters and the gait is more tottering. There is at first constipation, followed by a profuse and fetid diarrhoea.

The disease is spending itself in the stomach and bowels. The animal arching its back and especially the loins from the intensity of the pain. The brain is often affected so there is partial or total blindness and aimless movements. So also the glands will be enlarged and sometimes scrofulous ulcers will show in different parts of the body. The dead animal shows the lining membrane of the intestines inflamed and degenerated. The spleen enlarged, dark, and soft; the liver diseased, and often water exudations in the chest and belly. The duration in either form is from five to fifteen days.

What to Do. If the disease has progressed so as to show the latter symp-

toms we have described, kill, and bury the animal at once, and deeply. In any event separate the animals showing the slightest symptoms from the rest of the herd, and remove the well ones to comfortable and dry and well ventilated quarters, and give pure water and good, easily digested food. As soon as the first symptoms are discovered give an emetic as follows:

15 to 20 Grains powdered white helebore,
½ Pint milk.

Mix for a full-grown hog, and let it drink; if it will not, turn it down with a horn as previously described. This having vomited the hog, in a couple of hours after give two or three grains of tartar emetic, if the trouble is in the lungs; if in the bowels, two or three grains of calomel; either medicine to be given in the half of a roasted potato or apple if the animal will eat, or to be enveloped in tallow or lard and laid on the root of the tongue and the animal made to swallow. Repeat the dose twice a day until delief is obtained. According as the lungs or bowels are affected apply to the sore place the following blistering ointment, heating over a moderate fire for half an hour, and stirring to mix:

1 Oz. powdered cantharides,
4 Oz. olive oil.

Rub in well and repeat the application if no blister is drawn. If the animal improves, give every day for a few days the following:

20 Grains sulphate of iron,
30 Grains carbonate of potash.

This, when the lungs have been the seat of disease; if in the bowels, omit the carbonate of potash. In many cases the liver is torpid, and thus blood poisoning takes place. When the attack commences with copious and dark discharges from the bowels, give at once:

20 Grains podophyllin,
2 Drachms bicarbonate of soda.

Or, if constipation be present:

1 Ounce castor oil,
1 Drachm oil of turpentine.
Both to be given in a pint of milk or gruel.

INTESTINAL "HOG CHOLERA."

In relation to this disease, undoubtedly analogous to the one last described,

it is a specific contagious fever of swine, attended by congestion, exudation, blood extravasation, and ulceration of the membrane of the stomach and bowels. That is, fetid diarrhoea, general heat and redness of the surface, and on the skin and mucous membrane spots and patches of a scarlet, purple or black color. It is fatal in from one to six days, or ends in a tedious, uncertain recovery.

How to Know It. Incubation ranges from a week to a fortnight in cold weather, to three days in warm. It is followed by shivering, dullness, prostration, hiding under the litter, unwillingness to rise, hot, dry snout, sunken eyes, unsteady gait behind, impaired or lost appetite, ardent thirst, increased temperature (103 degrees to 105 degrees F.), and pulse. With the occurrence of heat and soreness of the skin, it is suffused with red patches and black spots, the former disappearing on pressure, the latter not. The tongue is thickly furred, the pulse small, weak and rapid, the breathing accelerated and a hard, dry cough is frequent. Sickness and vomiting may be present, the animal grunts or screams if the belly is handled, the bowels may be costive throughout, but more commonly they become relaxed about the third day and an exhausting fetid diarrdoea ensues. Lymph and blood may pass with the dung. Before death the patient loses control of the hind limbs, and is often sunk in complete stupor, with muscular trembling, jerking, and copious and involuntary motions of the bowels.

Causes. It is mainly propagated by contagion, though faults in diet and management serve to develop it. The infection is virulent, and may, it is supposed, be communicated by the wind, and is with difficulty destroyed in hog-pens, fodder, bedding and other articles of contact.

What to Do. Treatment should not be permissible, unless in a constantly disinfected atmosphere. Feed barley or rye, or in case these raise the fever, corn starch made with boiling water; give to drink fresh cool water, slightly acidulated with sulphuric acid. For the early constipation give a mild laxative (castor oil, rhubarb), to be followed up with nitrate of potassa and bisulphate of soda, of each 20 grains at a dose. If the patient survives the first few days and shows signs of ulceration of the bowels, by bloody dung, or tenderness of the belly, give oil of turpentine fifteen to twenty drops night and morning. Follow up with tonics and careful feeding.

PREVENTION.

Kill and bury the diseased; thoroughly disinfect all they have come in contact with; watch the survivors for the first sign of illness. Test all suspicious subjects by means of a clinical thermometer introduced in the rectum,

and separate from the herd if it shows 103 or more degrees Fahrenheit. And as soon as distinct signs of the disease are shown kill and bury deep. Feed vegetable or animal charcoal, bisulphate of soda, carbolic acid or sulphate of iron to the healthy swine, and avoid all suspected food or places or even water which has run near a diseased herd. All newly purchased pigs should be placed at a safe distance in quarantine, under separate attendants, until their health has been surely established as sound.

CONTAGIOUS PNEUMO-ENTERITIS.

This disease known commonly also as "hog cholera," "purple," "blue disease," etc., is a contagious inflammation of the lungs and bowels, accompanied with red and purple blotches of the skin, the last described being one of the relative forms of this disease.

Its Origin. It is supposed to be extremes of temperature and wet seasons, feeding on low or swampy soils, impure water, filthy feeding pens. Whether these causes originate the disease or not they incline the system to infections from the subtle poison due to a minute vegetable organism, found in the serous fluids, and tissues of animals infected. The disease will disappear if proper sanitary means are used, protection from the sun and rain, well ventilated quarters, and clean bedding, often renewed, with pure water and wholesome food. We have been thus particular to intensify what we have repeatedly said, cleanliness and care.

How to Know It. There two principal symptomatic forms which are important to be noticed, as follows:

The Erysipelatous Form. The animal at first is dull, loses his appetite, lies down and moves unwillingly. He hangs his head, and sometimes makes efforts to vomit. The bowels at this time are generally constipated, the excrement being hard and dark colored; cough and difficult urination.

The next day or in a few hours, even, the characteristic symptom of the disease shows itself. This consists in the appearance of dark red or purple blotches, passing into a bluish-black color. Once seen, they cannot be mistaken. Their most frequent seats are the ears, throat, neck, breast and inside the forelegs. If he is a white hog the discolorations are very visible. With these there is often a discharge from the nose of a dark purple fluid. Soon his breathing becomes panting and labored; he is palsied in his hind quarters, and if he is driven up runs reeling with his hind legs and his head dropped to the ground. At this stage a fetid diarrhoea sometimes sets in. The fatal termination is reached in one or three days.

The Form with Malignant Sore Throat. The general symptoms at the commencement are the same; and the appearance of the throat has that same deep red, passing into dark purple hue, which we have just noticed in the erysipelatous variety. But the obstructions to the functions of breathing and swallowing naturally produce a train of characteristic symptoms not seen in the former case. There are attempts to vomit, difficulty in swallowing, and labored breathing from the first, the sensation of choking being so distressing that the animal will sit on its haunches, like a dog, gasping for breath, opening its mouth wide, and protruding a livid and swollen tongue. Sometimes the swelling about the larynx is so sudden and considerable that the animal is choked to death in less than an hour, and before hardly any other symptom has had time to manifest itself (oedema of the larynx).

What to Do. The cheapest remedy with animals distinctly attacked, is to kill at once, and bury deeply out of sight, to prevent contagion. If the animals are valuable, isolate them from all danger of spreading the contagion; give two to three ounces of castor oil, and as soon as it operates, give twenty grains of nitrate of potash, and twenty grains nitrate of soda—mixed for a dose— two or three times a day. Give also powdered charcoal in the drink, and if the bowels are swollen and tender give twenty drops of turpentine in a little gruel, as may be needed, Or,

10 Grains powdered camphor,
1 Drachm nitrate of potash,
5 Grains calomel.

Mix and give in a little gruel three times a day, omitting the calomel. After the third dose, try;

2 lbs. flowers of sulphur,
2 lbs. sulphate of iron,
2 lbs. madder,
½ lb. black antimony,
½ lb. nitrate of potash,
2 Oz. arsenic.

Mix with twelve gallons of slop, and give a pint to each hog; this quantity being for 100 hogs.

Our best word of advice is, if the affected hogs cannot be made to take the remedies in their food or drink, since it is a question of profit and loss it is cheapest and most humane to **kill and bury quickly and deeply.** We have never found any remedy effective once it assumes a malignant form. Unfortunately, there are too many careless or pennywise persons who will not kill, and who constantly sprad contagious diseases.

QUINSY, OR STRANGLES.

This is a disease quite common and fatal. It is an inflammation of the glands of the throat (tonsils) and often kills quickly through suffocation. If in feeding them there be found difficulty in swallowing, or protrusion of the tongue, and slavering from the mouth, and if there be a swelling under the neck and lower jaw, lose no time, cast the pig so he may be held firmly and wet with hot water and partially wrung out, repeatedly applied, cover the parts with cloths to reduce the inflammation while an assistant prepares the following injection:

4 Oz. sulphate of magnesia,
2 Drachms oil of turpentine,
½ Pint soap suds.
Mix.

With a feather fastened to a small rod, the hog's mouth being held open, swab the tonsils and inside of the throat as far as can be reached, with equal parts of lard oil and turpentine, or if the hog will eat, give doses of two teaspoonfuls each in a pint of gruel.

RISING OF THE LIGHTS.

This is the name applied to an ordinary cold. To cure this, keep the animal warm, feed well, and rub mustard, moistened with vinegar, on the throat and chest. If it does not yield, give an ounce of tar daily, by putting a slip noose over the snout, opening the mouth, and placing the tar well back on the tongue with a narrow wooden paddle.

PNEUMONIA.

The symptoms of inflammation of the lungs are, quick and laborious breathing, loss of appetite, shivering of body and limbs, more or less severe cough; and the animal will not eat. The remedy is to keep the animal thoroughly warm and quiet. Rub the preparation of mustard and vinegar on the chest, and give internally:

2 Drachms nitrate of potash,
2 Drachms bisulphate of soda.

Mix in a pint of gruel if the animal will eat. If not turn down from a horn.

CATARRH IN THE HEAD.

Commonly called snuffles. Give the animal a clean, dry, warm pen, and feed and water well; soft food being preferable.

LICE.

If lice are found on swine, it is a sign that something is wrong. We have

never seen them on well conditioned swine. When they occur from any cause, sponge the animal freely with crude petroleum, or kerosene, and give a little sulphate of iron (copperas) one quarter drachm a day, in the food. Let the food also be ample and nourishing. Another efficient and safe remedy for killing lice is Scotch snuff, rubbed up with lard, and applied where the lice are found.

DIARRHOEA.

Diarrhoeal affections often attack young pigs during their sucking season, generally in first week of their life—and often causes their death. Usually the cause is due to diseased milk of the sow either from bad food or other causes. If so, change the food. In any case, the remedial means must be used with the sow. Place charcoal and salt where sow and pigs may get it, and prepare the following powder:

2 Pounds fenugreek, powdered,
2 Pounds anise seed, powdered,
1 Pound gentain, powdered,
2 Ounces carbonate of soda,
2 Pounds carbonate of soda,
2 Pounds chalk, powdered.

Give a table-spoonful of this in the food, every time the sow is fed.

From what we have said the reader will easily perceive that we have not much faith in remedial means in contagious diseases of swine. The same holds good with any animal when once the disease is pronounced, and of a malignant type—unless the animal be so valuable that it will pay to call a veterinary surgeon. Even then in the malignant forms of the diseases described, and which are known under the popular misnomer of "Hog Cholera," killing and burying is the cheapest and altogether the most humane. The danger of spreading; the difficulty of isolation; and the next to impossibility of treating a hog too sick to eat, but never too sick to be contrary, or resist to the full extent of their power, and the ordinarily small cost of swine per head should be well considered in the treatment of swine. Use proper discretion in treating them, but do not hesitate a moment in killing, when the disease is malignant.

CHAPTER XXI.

DISEASES OF FOWLS, AND REMEDIES.

There are but few diseases to which fowls are subject. Some of these, as apoplexy, are so sudden and fatal that there is scarcely time for remedies. Others, as so-called chicken cholera, are malignant and infectious, and thus require watching. Others again, inflammatory in their nature, are difficult to understand and hence difficult to treat. The general run of diseases, however, to which the fowls of the farmer and suburban fancier are liable to in his flock, are, as a rule, simple in their nature and of easy treatment. We shall, therefore, divide diseases into but two divisions—dangerous and simple ailments. In the first class will be considered those more fatal, and in the second class mere ailments, as leg weakness, bumble foot, catarrh, diarrhoea, pip, lice and other parasites.

ROUP.

The symptoms are at first those of severe catarrh. The discharge loses its thin, watery, transparent character, gets opaque, with a peculiar and offensive smell. The inner corner of the eye contains froth, the lids swell, stick together and at last close. The nostrils close from the same accumulation; the sides of the face swell and the bird dies. It is a disease of the lining membrane of the nasal cavities.

To Cure. Provide warm, dry, well-ventilated quarters, stimulating and nutritious food. Give internally a tea or a table-spoonful of castor oil, according to the sixe of the fowl, syringe the nostrils with chloride of soda, two parte water to one part of chloride. Inject by inserting the syringe in the slit at the roof of the mouth. Three or four hours after the oil give the following:

½ Ounce balsam copabia,
½ Ounce liquorice powder.
½ Drachm piperine.

Divide into thirty doses, enclose each in a little gelatine, and give a dose

twice a day. Isolate the sick fowl from all others, and kill promptly if they do not yield to treatment.

EGG BOUND.

In this disability the eggs cannot pass down the passage. Strip a tail feather to within an inch of the end; saturate it thoroughly in lard oil or sweet oil, and pass it carefully up the passage to the egg, lubricating the whole. If relief is not given, repeat the process.

INFLAMMATION OF THE EGG PASSAGE.

Symptoms. There will be general feverishness, dullness, and the feathers, especially those over the back, will be raised and ruffled. Give the following:

1 Grain calomel,
1-12 Grain tartar emetic.

Mix; envelop in gelatine and place well back on the root of the tongue until swallowed. If relief does not ensue in two days, give another dose.

CHOLERA.

Symptoms. There is sudden and great thirst with diarrhoea; the evacuations are greenish, but soon change to a whitish character; cramp ensues and the bird totters, falls, and often dies suddenly. Administer every three hours, until relief is obtained, the following:

5 Grains rhubarb,
2 Grains cayenne pepper,
10 Drops laudanum.

Give this at a dose for large fowls, and half this quantity to chickens two months old. Between each dose keep up the strength by giving a tea-spoonful of brandy and water, half and half. This is also good for common diarrhoea, omitting the brandy.

GAPES.

Parasitic worms in the windpipe, occurring in chickens up to two or three months of age.

How to Cure. Separate the chickens affected; strip a small quill feather

to within half an inch of the end. Dip in spirits of turpentine; pass it down the small opening of the windpipe at the base of the tongue; turn it once or twice around and draw it out. If it does not relieve operate again next day. Give a warm, dry place, plenty of good food, and for drink, milk well sprinkled with black pepper. It is supposed that the gape worm is produced by a small parasite insect resembling a tick found on the heads of young chickens. Examine the heads with a pocket lens and if found use the following, lightly rubbed on:

1 Ounce mercurial ointment,
1 Ounce lard oil,
½ Ounce flowers of sulphur,
½ Ounce crude petroleum.

Mix, and apply just warm enough to be melted. It is said that a case of gapes has never been found in which the young chickens were not first infected with the tick parasite.

BLACK ROT.

Swelling of the legs and feet, the comb black, resembling mortification. Give a tea-spoonful of castor oil, and then daily, until relieved, half a tea-spoonful of flowers of sulphur. This is also good in scaly leg, and eruptions of various kinds, using also, after washing clean, the following:

4 Ounces lard oil,
1 Ounce turmeric powder.
Annoint the affected parts.

CATARRH.

Symptoms like the first in Roup. Cleanliness is the best prevention. To cure, feed black pepper in mashed potatoes. If this fails, take:

3 Parts pulverized charcoal,
3 Parts new yeast,
2 Parts flowers of sulphur,
1 Part flour.

Mix into pills the size of a hazelnut and give one, three times a day; bathe the nostrils and eyes frequently with tepid milk and water, and keep the fowls otherwise clean.

CROP BOUND.

The food sometimes becomes bound and impacted in the crop. The remedy

is to make an incision into the crop sufficiently large so the contents may be carefully extracted with a blunt instrument. Close with a stitch, and feed with soft food for two or three days, in which a little gentian and cayenne pepper is mixed.

DIPHTHERIA, OR CROUP.

It may be known by the cough, raising of the head to breathe, and the offensive smell.

What to Do. Strip a feather to within half an inch of the end; wet it and dip in powdered borax, and swab the throat well. Give to drink, chloride of potassium, one-fourth of an ounce dissolved in a half-gallon of water.

Preventive. Cleanliness, good ventilation and care. The rule will apply to roup(catarrh, gapes, pip, and other acute and chronic diseases.

PIP.

This is a result of other diseases rather than a disease of itself. Remove the crust at the tip of the tongue and wash with chloride of soda, examine the nostrils for any stoppage, and give a tea-spoonful of castor oil if the fowl be very sick.

RHEUMATISM.

Cause. Exposure to damp and cold winds, and bad roosting places; remove the fowls to comfortable quarters, and feed warm, rather soft, stimulating food.

LAYING SOFT EGGS.

Give plenty of lime rubbish, burned and broken oyster shells, or bone meal.

LICE.

There should be no excuse for infestment by these parasites. They will sometimes make their appearance on new fowls, and setting hens will sometimes contract them. They are of two kinds: the common hen louse, and minute "hen spider," so-called. The latter very minute and infesting every part of the house, and often the horse stables, if the hens are allowed to run there. To rid the house, take out every removeable article and wash thoroughly with carbolic acid and water, or with the ammoniacal water of gas factories, which is cheap. Wash also every portion of the house with the same. Or, fumigate by closing every crevice, and burning in an iron pot containing a burning hot stone, half the size of a amn's head, a pound of roll brimstone, keeping the house closed two or three hours. Then wash every part of the house with lime-wash in

which a pound of potash has been dissolved to each quart of water used in thinning the wash. Wash also the furniture, nests, perches, and all else with the potash solution, one pound to a quart of water. Put back the furniture, place fresh hay in the boxes, plenty of dust baths near, and the lice will leave the fowls and die. In case the stable becomes infested, or other places that may be fumigated, wash with potash solution, or the lime wash, containing one part in twenty of carbolic acid.

CHAPTER XXII.

DISEASES OF DOGS AND THEIR TREATMENT.

TREATMENT OF ASTHMA.

Asthma in dogs is oft times hereditary, especially in house and pet dogs, and may be brought about by indigestion or irritation of the stomach. A sudden change of weather will bring it on. Fat dogs are especially prone to it; the symptoms are: thick heavy breathing, a hollow, husky bark, much panting, and great constipation. Begin with low diet and administer:

Charcoal, 1 scruple,
Iron, 10 grains.

in a pill three times a week. Exercise and keep bowels moved with castor-oil twice a week until relieved.

BRONCHITIS.

Is caused by neglected colds, cold, damp kennels, want of care after returning from wet hunting grounds, etc., and may be known by a continuous wheezing dry cough, which at times causes an effort to and brings vomiting, the expectoration being frothy and mixed with blood, the eye inflamed, and the nose dry; the tongue parched, with the pulse quick. In the beginning of the attack give the dog a warm kennel where there are no draughts, and dose with 1 to 3 grains tartar emetic, according to size of the animal. If this does not check give spirits of camphor ½ oz., spirits of ether nit., 1 ounce, ext. liquorice 4 oxs.; a teaspoonful for small dog three times a day, and three times the amount for large dog three times daily. Feed with warm broths and bread and milk.

COMMON COLD.

Is known by sudden chilliness with heated surface of the body, quick pulse

and hurried breathing. The appetite fails, bowels are costive, and urine high colored. Very often there is a slight cough, and a running from the eyes and nose, which is hot and dry. Cause, exposure or sudden checking of the temperature of the body. For treatment give a dose once a day of:

Podophyllin, ½ grain,
Ext. colocynth, 12 to 18 grains,
Powdered rhubarb, 3 to 5 grains,
Oil of Cloves, 2 drops.

INFLUENZA.

Is difficult to distinguish from common cold; the running of nose and eyes is more copious and continued, cough severer and fever higher. Administer dose as for common cold, and if not relieved give bolus of:

Ipecacuanha, ½ to 1½ grains,
Rhubarb, 1 to 2 grains,
Powdered opium, 1 to 1½ grains,
Compound squill pill, 1 to 2 grains.

Give night and morning. Keep in dry comfortable kennel indoors, and feed on light diet.

PLEURISY.

Is an inflammation of the membrane of the lungs caused by debility, cold or inflammation of the neighboring textures, and sometimes by wounds, or a severe beating of the body. It is ushered in by shivering and quick breathing, inspiration especially short, caused by the pain occasioned by the movement of the ribs. A dry cough is present, fever, nose hot, tongue slimy, eyes watery, pulse hard. The dog sits on his hind querters, with his forelegs stretched apart, as if to close them caused pressure and pain. Administer:

Spts. aether. nit., 2 ounces,
Liq. ammonia acetat., 4 ounces.

A teaspoonful every four hours, mixed with double the amount of linseed tea for a small dog; twice the quantity of each for large dog.

Apply counter irritants of mustard plaster to chest.

PNEUMONIA.

Is brought about by exposure likewise, and oftentimes by the animal not being thoroughly dried and protected from the cold after washing in warm water. The dog is seen to shiver greatly; this shivering is followed by high fever, pulse rapid, breathing quickened, accompanied with a short cough, eyes blood-shot. Treat the same as in pleurisy, especially the counter irritants.

CONSUMPTION.

Is hereditary in the dog as in man. Close confinement will bring it on, as will bad food, and excessive in and in breeding; it sometimes follows distemper. All that can be done is to keep up the strength of the dog with cod-liver oil and iron and good diet, avoiding a damp or cold kennel.

RHEUMATIC FEVER.

Dogs frequently have rheumatism, especially hunting dogs, and it is always accompanied with more or less fever; damp kennels often cause it. Its signs are as follows: there is considerable fever, but of not very high character; the pulse is quick with shivering except when touched, when the slightest approach will cause a shriek apparently from pain. A good treatment is first a dose of physic of:

Calomel, 3 to 5 grains,
Jalap, 10 to 20 grains.

Mixed with syrup and made into a bolus.
And follow, after it has operated, with:

Calomel, 1 grain,
Powdered opium, 1 grain,
Powdered colchicum, 2 to 3 grains.

And syrup enough to make one pill.
This is a dose for an average dog. The animal may be rubbed with any approved liniment where the pain seems to be present, and his diet be made a low one.

DISTEMPER.

The great majority of dogs are attacked with distemper about the time they are casting their milk teeth, or a short time after they have gained their second; but few animals escape it. An ordinary course of an attack of distemper is as follows: great dullness with loss of appetite, followed in a day or two by a husky cough, especially showing itself after exercise; a sneezing is now noticed, strength and flesh rapidly diminish, the stools are inky and offensive, the urine becomes very high colored, and the membranes of the eye and sometimes the whites are greatly inflamed. Some cases of distemper seem to be confined principally to the head, another to the chest and the third the bowels. When the brain is attacked the eyes show increased mucus discharge as the disease progresses. These are the general symptoms which intensify to the third, fourth or fifth week, when the dog dies from disease of the brain, lungs, bowels or ex-

haustion. When the head is attacked there may or may not be a running from the nose. A fit is most always the surest sign of brain trouble, and when this takes place more than twice, the distemper generally proves fatal, or the animal is ever afterwards affected with chorea, or the jerks. If the lungs be involved there is rapid breathing, cough, and profuse running from the eyes and nose. If this runs into inflammation of the lungs the danger is as great as if the head was affected. The bowels are sometimes seized and show by black purgings that these organs are involved, very often in this stage discharges of blood quickly carry a dog off. The best general treatment for distemper is as follows. At the commencement of the attack:

Syrup of buckthorn, 2 ounces,
Syrup of poppy, 1 ounce.

A tablespoonful once or twice at intervals of two days. And a fever mixture as follows:

Niter, 1 Drachm,
Spts. of niter, 3 drachms,
Midererous spirit, 1 ounce,
Camphor mixture, 6½ ounces,
Two table-spoonfuls every six hours.

If the lungs are severely attacked, a powder must be put upon the dog's tongue every night and morning of:

Niter in powder, 3 to 5 grains,
Tartar emetic, ¼ grain.

And a cough bolus of:

Ipecacunaha in powder, ½ to 1½ grains,
Powdered rhubarb, 1 to 2 grains,
Purified opium, ½ to 1½ grains,
Compound squill pill, 1 to 2 grains.

Administered every night and morning. If diarrhoea shows itself check it with:

Prepared chalk, 2 to 3 drachms,
Aromatic confection, 1 drachm,
Laudanum, 3 to 8 drachms,
Powdered gum arabic, 2 drachms,
Water 7 ounces.

Two tablespoonfuls every time the bowels are relaxed.

For a diet, beef tea thickened with rice can be given, and for a time when the dog shows great exhaustion, a mixture of tincture of bark 2 ounces, decoction of yellow bark 14 ounces, a tablespoonful 3 times a day to a large dog, should be administered; especially at the time of exhaustion should good strong

beef tea with the white of an egg broken into it while it is lukewarm, be given by spoon every two or three hours. And if the animal will not swallow it, his head should be held up and he should be forced to. If this troublesome plan of feeding is attended to, many a valuable dog can be saved to his owner. As strength gradually returns the diet can be made stronger, with care followed to allow no exercise until a gain is well established, and strength greatly restored for fear of a relapse. The kennel during distemper should be dry and moderately warm, and in a position wher the dog will not be exposed to draughts of air. Finely bred animals suffer the greatest, especially those that are much in and in bred, when the malady many times attacks the brain, which is the most dangerous seat of the disease. Fit after fit takes place and the dog is carried off by them. Some seasons distemper appears to be epidemic and is more severe and fatal in its effects, and scarcely a dog in certain sections escape. Dog shows are a great means for spreading the disease, and it is advisable not to enter an animal until he has had the disease. Distemper can be had twice, but it is seldom a dog is attacked more than once.

TREATMENT OF INFLAMMATION OF THE STOMACH.

Inflammation of the stomach or gastritis is brought about by improper food, foreign substance in the stomach or poison. When a dog is suffering from this complaint he makes frequent and violent efforts to vomit, and has great thirst, dry and hot nose and quick respiration, and will ofttimes lie on the floor, or pavement, or ground with his belly in contact with it as if to allay the pain.

Give

Calomel, 1 grain,
Opium, 1 grain,
In pill every three hours.

And feed if he will take it with light soup and gruel. Gastritis and dyspepsia are much alike and may be treated the same. Continue easily digested food in dyspepsia; the peculiar posture described is not noticed in the latter complaint.

TREATMENT OF INFLAMMATION OF THE LIVER.

Sporting dogs frequently have this affliction, especially when they have been exposed to cold and wet. Animals having little exercise ofttimes are attacked owing to torpidity of the liver, which many times runs into this complaint. The whites of the eyes in this disease are yellow. Shivering, hot noses, rapid breathing, costiveness, weak pulse anl scanty clay colored stools are also accompanying symptoms. The dog should be given a pill of:

Podophyllin, ½ grain,
Ext. of colocynth, 12 to 18 grains,
Powdered rhubarb, 3 to 5 grains,
Oil of cloves, 2 drops.

The greater proportion for large dogs and less for small dogs.
As soon as this has operated rub the right side with an embrocation of:

Strong mustard, 3 to 5 ounces,
Liquid ammonia, 1 ounce,
Spts. turpentine, 1 ounce.

At the same time give a pill:

Opium, 1 grain,
Calomel, 1 grain.

And keep bowels open with castor oil.

TREATMENT OF INFLAMMATION OF THE BOWELS.

It is generally caused by constipation or a great amount of indigestible food, and may be known by great thirst and loss of appetite, and the peculiar attitude the animal takes; his back arched and his legs drawn together. It may be relieved by calomel and opium in doses of 1 grain each every 3 to 4 hours. If severe, bathe the dog in warm water, and after he is well dried, rub his belly with a liniment of ½ ounce each of spirits of turpentine, liquor ammonia and laudanum. Feed with very light and easily digested food.

MANGE.

Mange is a skin disease in dogs arising from filth, damp kennels, housing in cellars and parasites; the disease is of different varieties. First the blotch, which appears in scaly lumps of hide chiefly on the back, sides, head and quarters, and in a few days the scab drops off, leaving a moist red spot.
Give:

Calomel, 3 to 5 grains,
Jalap, 10 to 20 grains.

Keep on low diet and give exercise. Secondly the foul mange, which is brought about by impure blood, and cannot be cured until it is changed. It is considered hereditary though not contagious. In foul mange the skin becomes thick and discharges an offensive matter, and finally runs into ulcers, with great itching all the time; the hair becomes dead and falls out, and the animal is nervous and irritable. To cure requires patience and ofttimes long treatment. Change the diet at once, give no meat, starve the dog until he will accept oatmeal mush with boiled vegetables freely mixed with it, then administer liquor

arsenicalis with the food, one drop to each four pounds in weight of the dog three times daily, dividing the food into three portions for morning, noon and night. This must be kept up until itching ceases, and very often continued for months. Cosmoline may then be rubbed on the mangy skin thrice daily.

Red mange is a disease of the hair, and may be known by the red appearance always at the roots in spots, at the elbows under the arms and inside of them, also inside the thighs. An ointment for red mange, of the following, well rubbed into the spots, is good:

Green iodide of mercury, 1½ drachms,
Spts. of turpentine, 2 drachms,
Lard, 1½ ounces.

A wash of carbolic acid 1 part to water 30 parts, and plain cosmoline is efficacious also.

CANKER OF THE EAR.

Whenever a dog is seen to shake his head continually, and frequently scratch his ear, endavoring to relieve an apparent inward itching of that organ, it is generally safe to conclude he has the canker. Sometimes the tips or edges are first affected, and the inflammation will, if not then arrested, gradually extend to the interior, which when attacked discharges offensive matter. Hunting dogs, especially water dogs, are subject to canker. To cure, place on low diet, and syringe the ear, first having washed it out with lukewarm water, with a weak solution of:

Nitrate of silver, 2 to 6 grains,
Water, 1 ounce.

according to size of dog; the first day, and on the second drop into the ear:

Green iodide of mercury, 1 drachm,
Melted lard 8 drachms.

Alternate these until relief is had. If there are any sores on the edges of the ear, touch them with blue stone.

FLEAS AND LICE.

Make a stiff lather that will stand alone of strong rosin soap; rub it thoroughly into the hair and all over the body, being careful of the eyes, and let it dry on the dog and remain an hour. Then wash off, and the water will carry the dead fleas and lice with it. This is safe and most certain.

Persian insect powder is best for young puppies.

CHOREA OR JERKS.

This disease, often called St. Vitus' dance, cannot be mistaken in a dog when he is afflicted. He will have either a continual jerking movement of the paws, head, shoulders or foreleg, intensified when asleep. It often follows distemper and cannot be cured. The animal's general health does not seem to be affected by it, but it renders him unfit for very hard work. It evidently affects his power of scenting to a degree. Keep from exposure to wet and cold, and give a tonic when very nervous of:

Sulph. of zinc, 2 to 5 grains,
Ext. of gentian, 2 grains,
3 times a day.

FITS.

They are of three kinds. 1st. Those arising from irritation (frequently worms), and the majority of times in puppies. 2nd Those caused by brain troubles. 3d. Epilepsy. Fits resulting from irritation come on at the age when puppies begin to cut their teeth. A hot bath will check them. Apoplectic fits are generally fatal. The dog does not foam at the mouth in these, but lies quite still on his side and breathes heavily.

Epileptic fits are known by the frothing at the mouth and a champing of the jaws. These can be cut short by an injection of five drops ether to an ounce of warm water. Give also two grains bromide of potassium twice a day for three or four weeks.

WORMS.

There are three kinds of worms that infest the stomach of a dog. 1st The maw worm, of a white color, about an inch long. 2nd. The round worm, 4 to 7 inches long, pointed at both ends. 3rd. The tape-worm, often growing a number of feet in length, and composed of many small links or joints. When a dog is troubled with worms his coat becomes harsh and dead in appearance. He is costive and loose at times, and his stool is generally mixed with a white slimy mucus. His appetite is ravenous, yet sometimes poor. He seems to derive no benefit from his food, and may be seen to swallow small pieces of dirt, ashes, rags or sticks, in order, as it were, to force the worms from the stomach.

An infallible cure for the maw and round worm is a dose each day of vermifuge on an empty stomach, followed in two hours with castor. This vermifuge is composed of male fern and santonime. Another good remedy is powdered areca nut—half of an average-sized nut made fine to a dog 30 pounds in weight, given each day, as much as can be held on a 25 cent piece, on an empty stomach, followed in two hours by castor oil.

A good expellent for tape worm is 3 to 10 drops of turpentine according to the size of the dog in a teaspoonful of oil, having well fasted the animal.

RICKETS OR LARGE JOINTS

are caused by defective bone substance. Cod liver oil and phosphate of lime (the combination can be readily purchased) will remedy. Dose, dessert spoonful three times daily for a large dog, a teaspoonful three times a day for a small dog. A young dog with rickets should have ample exercise. A want of it aids is bringing on the disease.

PUERPERAL FITS.

Sometimes after a mother has given birth to a litter of puppies and about the time she begins to suckle them, she is taken with spasms or puerperal fits. When this occurs, place her at once in a hot bath, and immerse all except the head. This is, in the majority of time, unfailing in its effect.

PROTRACTED LABOR.

A healthy bitch very seldom has troble in giving birth to a litter. The time may be prolonged in some and short in others, but, as a rule, it is best to allow nature to have its course. If, however, assistance is absolutely needed, a gentle manipulation may be made, and a few drops of ergot administered.

SPRAINS.

Rub the injured part with:

Malt vinigar, 1 ounce,
Spirits vini et camp, 2 ounces,
Aqua, 7 ounces.

TO HARDEN TENDER FEET.

Bathe the feet daily in a solution of white oak bark and alum. Every other day rub into the soles cosmoline.

CHAPTER XXIII.

SOME VALUABLE RECIPES.

Horse Ointment.—Resin, 4 ozs.; beeswax, 4 ozs.; lard, 8 ozs.; honey, 2 ozs. Melt these articles slowly, gently bringing to a boil and as it begins to boil, remove from the fire and slowly add a little less than a pint of spirits of turpentine, stirring all the time this is being added, and stir until cool.

This is an extraordinary ointment for bruises, in flesh or hoof, broken in knees, galled backs, bites, cracked heels, etc., etc.; or when a horse is gelded, to heal and keep away flies. It is excellent to take fire out of burns or scalds.

Condition Powders.—Fenugreek, cream of tartar, gentian, sulphur, saltpeter, resin, black antimony, and ginger, equal quantities of each, say 1 oz.; all to be finely pulverized; cayenne, also fine, ½ oz. Mix thoroughly.

Cathartic Condition Powder.—Gamboge, alum, saltpeter, resin, copperas, ginger, aloes, gum-myrrh, salts, and salt, and if the horse is in a very low condition, put in wormwood, all the same quantities, viz., 1 oz. each. DOSE.—One tablespoon in bran, twice daily; not given any other grain for a few days; then once a day, with good feed.

This last is more applicable for old worn down horses which need cleaning out and starting into new life, and is such cases, just the thing to be desired.

English Stable Liniment.—Oil of spike, aqua ammonia, and oil of turpentine, of each 2 ounces; sweet oil and oil of amber, of each, 1½ ozs.; oil of organum, 1 oz. Mix.

Call this good for anything, and always keep it in the stable as a strong liniment.

Hoof Ointment.—Take resin, 4 ozs.; beeswax, 6 ozs.; lard, 2 lbs.; melt together, pour it into a pot, add turpentine, 3 ozs.; finely powdered verdigris, 2

ozs.; tallow, 1 lb.,—stir all until it gets cold. This is one of the best medicines for the hoof ever used. It is good for corks or bruises of the feet.

Hoof Liquid.—For tender feet, hoof bound, etc. Linseed oil or neatsfoot oil, ½ pt., of either; turpentine, 4 ozs.; oil of tar 6 ounces; organum, 13 ounces; shake this well and apply it. This is the best if the horse has been lame long—it penetrates the hoof sooner than the ointment—both of them should be applied at night.

White Ointment.—For rheumatism, sprains, burns, swellings, bruises, or any inflammation. Take fresh butter, 2 lbs.; tincture of iodine, ½ oz.; oil of organum, 2 ozs.; mix well for fifteen minutes and it is fit for use; apply it every night; rub it in well with your hand.

Black Liniment.—This is good to apply on poll evil and fistula. Take linseed oil, ½ pt.; tincture of iodine, 3 ozs.; turpentine, 4 ozs.; oil of origanum, 1 oz.; shake all well and apply it every day; rub it in well with your hand; wash the part clean with soap and water before applying. This is good for any swelling.

Eye Water—For Horses and Cattle—Alcohol, 1 table-spoon; sugar of lead, 1 teaspoonful; rain water ½ pint.

Wash the eye freely two or three times daily.

Ointment.—Resin, 4 ozs.; beeswax, 3 ozs; hog's lard, ½ lb.; common turpentine, 6 ozs.; dissolve in a pipkin with gentle heat; then add 2 ozs. of fine verdigris, stir well together, and strain the whole through a coarse cloth; cool for use. This is a good ointment for a wound or bruise in flesh or hoof, broken knees, galled hocks, bites cracked heels, mallenders, or, when a horse is gelded, to heal and keep off the flies.

Cordial for a Horse.—If the horse is weak through travel, give him a pint of warm ale, with 1 oz. of diapente in it. Diapente will comfort his bowels, drive out cold and wind, and may cause him to carry his food the longer. Diapente is composed of gentian root, bay berries, bay leaves, birthwort, mint and myrrh.

Muscle Liniment.—Oil of origanum, 1 oz.; alcohol, ½ pint; oil of cedar, ½ oz.; turpentine, ½ oz.; olive oil, 8 ozs. Shake all well. This is used for almost all complaints of the muscles. This is especially valuable in all sprains and contractions.

Blue Ointment.—Take the ointment of resin, 4 ozs.; finely ground verdigris, ½ oz.; turpentine 3 ozs.; mutton tallow, 2 lbs.; oil origanum, ½ oz.; tincture of iodine, ½ oz.; mix all well. This is one of the best medicines that can be made for scratches, hoof-evil, cuts, and is good to apply on fistula.

CHAPTER XXIV.

SOME PRACTICAL SUGGESTIONS.

Stock Food.—The consumption of stock food by the farmers and stock raisers of this country has become enormous. There are over one hundred concerns manufacturing and selling this article. Some of them of large capital and extensive business. The profits are very great. One concern started twenty years ago with two-thousand dollars capital. Today is has one million dollars capital and does a volume of business of thirteen million dollars a year. The point we want to urge is **make your own stock food.** They are all about alike, and are made substantially after the following formula:

> To make the highest grade of stock food take; gentian, sulphur, saltpeter, resin, black antimony, ginger, fenugreek and charcoal, of each 1 lb.; pulverize thoroughly. Add ½ lb. of cayenne, ½ lb. of cream of tartar, also fine. Take 5 lbs. of linseed meal and 15 lbs. of shorts and mix the above with it thoroughly, taking care that no lumps of any of the drugs remain. Add two lbs. of fine salt and **mix.**

This makes over thirty pounds of superior stock food, equal to any on the market and better than most of them and ought not to cost you over seventy-five cents for the entire lot, while at prices charged by the manufacturing concerns, it would cost you about $5.00. Your stock need just such a tonic. You can provide it cheaply. Give two tablespoonfuls of above food twice a day in each horse's food. It had better be mixed in a mash of ground feed. For young horses, reduce the dose. For cattle, make it three tablespoonfuls at each feed.

What we have said of stock food is equally true of poultry food. For a poultry food equal to the best, that will ward off roup and colds and increase the production of eggs:

Take of sulphur, powdered charcoal, and ginger, each 3 lbs.; cayenne 5 lbs.; linseed meal 6 lbs.; shorts 20 lbs.; and ground alfalfa 60 lbs. Mix thoroughly and in feeding to poultry, mix one part of food with six parts of ground feed, wet and somewhat warm.

This hundred pounds of poultry food will cost you less than four dollars, while an analysis would show that it is stronger in medical power that nine-tenths of the goods on the market, which would cost you $20.00 for the same quantity.

A good disinfectant is absolutely essential to the well-being of stock. For this, nothing is more effective than one part carbolic acid to ten parts of water. It is very cheap. Ten gallons of it will cost but little. Sprinkle chicken houses, roosts, nests and also all your stables and outhouses with it. It exterminates lice and vermin generally, and purifies the air.

If your horses are badly worked down, prepare the following:

Take gentian, sulphur, and charcoal, of each 5 lbs.; linseed meal 25 lbs. Mix all together thoroughly, and then mix it all with 500 lbs. of ground alfalfa. Give one pint of this in each horses feed twice a day. In addition, take the following: tincture of asafoedita, 1 oz.; tincture of cantharides, 1 oz.; oil of anise, 1 oz.; oil of cloves, 1 oz.; oil of cinnamon, 1 oz.; antimony, 2 ozs.; fenugreek, 1 oz.; whisky ½ gallon. Let it stand a week and give 30 drops in a pail of water twice a day. The result will gratify you.

If at any time any disease among your stock does not yield to the treatment indicated in this work, or you are in doubt as to diagnosis, write immediately, setting forth all the facts, to the Veterinary Staff, Farmers' Protective Directory Company, at the home office.

INDEX.

CHAPTER I.—Introduction.—pp. 3-5.

CHAPTER II.—The Horse. Diseases of the Skin and Sub-Cutaneous Tissues—Scratches—Grease, or Cracked Heels—Thrush—Swelled Ankles—Swelled Legs—Surfeit—Mange—Ringworm—Hide-Bound—Saddle Galls, or Sitfasts—Fungous Collar Tumors—Warts—Vermin—Mallenders and Sallenders—Poll Evil—Fistula.—pp. 6-25.

CHAPTER III.—Diseases of the Glands and Nasal Membranes. Glanders—Farcy—Distemper—Nasal Gleet—Nasal Polypus—pp. 26-31.

CHAPTER IV.—Diseases of the Throat, Chest and Lungs. Chest Founder—Bronchitis—Pneumonia, or Inflammation of the Lungs—Pleurisy—Colds Enlarged Glands and Goitre—Swelled Throat, or Laryngitis—Chronic Cough—Broken Wind; Bellows; Heaves—Influenza—pp. 32-43.

CHAPTER V.—Diseases of the Stomach and Bowels. Sour Stomach—Colic—Bots—Spontaneous Salivation—Chronic Gastritis—Inflammation of the Peritoneum—Parasites Which Infest the Intestines—Diarrhoea—pp. 44-52.

CHAPTER—VI.—Diseases of the Liver, Urinary Organs, etc. Yellow Water—Inflammation of the Kidneys—Profuse Staling, or Diabetes—Thick and Albuminous Urine—Suppression of Urine—pp. 53-57.

CHAPTER VII.—Diseases of the Teeth and Mouth. Aptha—Inflammation of the Parotid Gland—Sore Mouth or Tongue—Scald Mouth—pp.58-60.

CHAPTER VIII.—Diseases of the Heart, Blood, etc. Thumps—Enlargement of the Heart—Inflammation of the Absorbents—Scarlatina.—pp. 61-65.

CHAPTER IX.—Diseases of the Brain. Mad Staggers—Blind Staggers—Abscess Within the Brain—pp. 66-71.

CHAPTER X.—Diseases of the Muscles and Tendons. Blood Spavin—Bog Spavin—Curb—Thorough-pin—Tetanus, or Lockjaw—Cramps—Rheumatism—Groggy Knees—Sweeny of the Shoulder—Sweeney of the Hip—Bone Spavin—pp.72-79.

CHAPTER XI.—Diseases of the Eye. Naturally Weak Eyes—Sore Eye Lids—Moon Eyes— Cataract—Enlargement of the Hock—Ringbone—pp. 80-84.

CHAPTER XII.—Diseases of the Feet. Cracked Hoofs—Hoof Rot—Corns—Injuries of the Frog—Canker—Sand Crack—Toe Crack—pp. 85-90.

CHAPTER XIII.—Miscellaneous Minor Diseases. Epithelial Cancer—Stings and Bites—Thick Wind—Wind Galls—pp. 91-92.

CHAPTER XIV.—Medicines. What to Keep, How to Obtain, How to Prepare, and How to Give Them—pp. 93-105.

CHAPTER XV.—Breeding. What to Breed, How to Breed, and Care of Mares and Foals—pp. 106-111.

CHAPTER XVI.—Raising the Colt. Instructions How to Feed, Care for, and Train—pp. 112-114.

CHAPTER XVII.—Diseases of Cattle. Their Causes; How to Know Them; What to Do; General Instructions for Diagnosis and Administering of Medicine—pp. 115-121.

CHAPTER XVIII.—Gestation; Diseases and Accidents Thereof; and Other Diseases More or Less Common. Epizootic—Malignant Catarrh—Lice—Fouls in Cattle—Horn Ail—Diarrhoea—Cow Pox—pp. 122-128.

CHAPTER XIX.—Diseases of Sheep. Lockjaw—Palsy—The Scab—Foot Rot—Fouls, and Travel Sore—Gravel—Inflamed Biflex Canal—Maggoty Sheep—Lung Worms—Intestinal Worms—Rot, or Liver Fluke—pp. 129 134.

CHAPTER XX.—Diseases of Swine. Malignant Epizootic Catarrh—Intestinal "Hog Cholera"—Contagious Pneumo-Enteritis—Quinsy—Rising of the Lights—Pneumonia—Catarrh in Head—Lice—Diarrhoea—pp. 135-141.

CHAPTER XXI.—Diseases of Fowls and Remedies. Roup—Egg Bound—Inflammation of Egg Passage—Cholera—Gapes—Black Rot—Catarrh—Crop Bound—Diphtheria, or Croup—Pip—Rheumatism—Laying Soft Eggs—Lice—pp. 142-146.

CHAPTER XXII.—Diseases of Dogs and Their Treatment. Asthma—Bronchitis—Common Cold—Influenza—Pleurisy—Pneumonia— Consumption—Rheumatic Fever—Distemper—Inflammation of the Stomach—Inflammation of the Liver—Inflammation of the Bowels—Mange—Canker of the Ear—Fleas and Lice—Chorea, or Jerks—Fits—Worms—Rickets—Puerperal Fits—Protracted Labor—Sprains—To Harden Tender Feet —pp. 147-155.

CHAPTER XXIII.—Some Valuable Recipes—pp. 156-157.

CHAPTER XXIV.—Some Practical Suggestions. Stock Food, How to Make—Poultry Food—Horse Tonic—Disinfectant—pp. 158-159.

ALPHABETICAL LIST OF SUBJECTS.

A

Ankles, Swelled 11
Aptha 58
Absorbents, Inflammation of 62
Abscess within the Brain 70
Asthma 147
After-Birth, Retention of 123

B

Bowels, Inflammation of 152
Bellows 41
Bites 91
Biflex Canal, Inflammation of 132
Blood Spavin 72
Bots 47
Broken Wind 41
Brain, Abscess within 70
Bog Spavin 72
Bone Spavin 79
Breeding 106
Black Rot 144
Bronchitis, In Dogs 147
Bronchitis, In Horses 32
Blind Staggers 68

C

Catarrh in the Head 140
Canker 88
Cataract 82
Cancer, Epithelial 91
Cattle, Diseases of 115
Calves, Treatment of 124
Colic, In Horses 45
Colds 37
Chronic Cough 40
Cracked Heels 7
Cramps 75
Cracked Hoofs 85
Crack, Toe 89
Crack, Sand 89
Curb, ... 73
Colts, How to Raise 112
Catarrh, Malignant, in Cattle 126
Chest, Diseases of 32
Cow-pox 127
Collar Tumors 19
Catarrh, Malignant Epizootic 135
Chicken Cholera 143
Common Cold, In Dogs 147
Chorea 154
Cholera, In Chickens 143
Consumption, In Dogs 149
Catarrh, In Chickens 144
Chest Founder 32
Croup 145
Crop Bound 144
Canker of the Ear 153
Corns 86

D

Diseases of Dogs 147
Distemper, in Horses 28
Diabetes 54
Distemper, In Dogs 149
Diarrhoea, in Swine 141
Diarrhoea, in Horses 50
Diarrhoea, In Cattle 127

Doses, Graduating 104
Doses of Medicine 101
Disease, Diagnosis of, in Cattle 118
Diphtheria 145
Dogs, Diseases of 147
Disinfectant 159

E

Egg Bound 143
Epizootic Catarrh, Malignant 135
Epizootic, In Cattle 125
Egg Passage, Inflammation of 143
Enlarged Glands 39
Enlargement of the Hock 82

F

Farcy 28
Fistula 23
Fowls, Diseases of 142
Foot Rot 131
Frog, Injuries of 87
Fouls, on Cattle 126
Fouls, on Sheep 132
Fleas and Lice 153
Fits 154

G

Galls 18
Gastritis 48
Gestation 122
Gapes 143
Glanders 26
Gleet, Nasal 30
Grease 7
Groggy Knees 77
Gravel 132
Glands, Diseases of 26
Goitre 39

H

Hidebound 17
Heaves 41
Hoofs, Cracked 85
Hoof Rot 85
Hock, Enlargement of 82

Heart, Enlargement of 62
Horse Tonic 159
Hog Cholera 136
Horn Ail 127

I

Inflammation of Absorbents 62
Inflammation of Parotid Gland 58
Inflammation of Biflex Canal 132
Inflammation of the Lungs 34
Introduction 3
Inflammation of the Kidneys 53
Inflammation of Egg Passage 143
Inflammation of Peritoneum 49
Inflammation of the Stomach, in Dogs 151
Inflammation of the Liver, in Dogs 151
Inflammation of the Bowels, in Dogs 152
Influenza, in Dogs 148
Influenza, in Horses 42
Injuries of the Frog 87

J

Jerks 154

K

Kidneys, Inflammation of 53

L

Laryngitis 39
Liver Fluke 133
Lockjaw, in Horses 74
Lockjaw, in Sheep 129
Liver, Inflammation of 151
Lice, on Cattle 126
Lice, on Swine 140
Lice, on Fowls 145
Lice and Fleas, on Dogs 153
Lungs, Inflammation of 34
Lungs, Diseases of 32
Lung Worms 132
Laying Soft Eggs 145
Legs, Swelled 12

M

Maggoty Sheep 132
Medicines, How to Give Cattle 116

Medicines, What to Give 93
Measure of Medicine 101
Moon-Eyes 81
Mallenders 21
Mad Staggers 66
Mange, in Horses 14
Mange, in Dogs 152

N

Nasal Gleet 30
Nasal Polypus 31
Nasal Membranes, Diseases of 26

P

Parotid Gland, Inflammation of 58
Parasites, Intestinal 50
Peritoneum, Inflammation of 49
Pip 145
Poll Evil 22
Pleurisy, in Horses 36
Pleurisy, in Dogs 148
Palsy 129
Paralysis, Temporary 124
Pneumonia, in Horses 34
Pneumonia, in Swine 140
Pneumonia, in Dogs 148
Polypus 31
Poultry, Diseases of 142
Pneumo-Enteritis 138
Profuse Staling 54
Puerperal Fits 155
Poultry Food, How to Make 158

Q

Quinsy 140

R

Rheumatism, in Horses 75
Rheumatism, in Fowls 145
Rheumatic Fever 149
Rickets 155
Roup 142
Rising of the Lights 140
Ringworm 16
Ringbone 83

Rot 133
Recipes 156

S

Sand Crack 89
Scarlatina 64
Stock Food, How to Make 158
Sitfasts 18
Saddle Galls 18
Scab 130
Scratches 6
Sheep, Diseases of 129
Sour Stomach 44
Sore Eye Lids 80
Stomach, Inflammation of 151
Swine, Diseases of 135
Swelled Ankles 11
Swelled Legs 12
Swelled Throat 39
Sweeny of the Shoulder 77
Sweeny of the Hip 78
Scald Mouth 59
Sore Tongue 59
Sore Mouth 59
Spontaneous Salivation 47
Spavin, Blood 72
Spavin, Bog 72
Spavin, Bone 79
Staggers, Mad 66
Staggers, Blind 68
Stings 91
Strangles 140
Sprains 155
Sallenders 21
Suppressed Urine 56
Suggestions 158
Surfeit 13

T

Tetanus 74
Thorough-pin 73
Thrush 10
Toe Crack 89

Thumps 61
Tonic for Horses 159
Throat, Diseases of 32
Thick Wind 91
Tender Feet 155
Tumors 19

U

Urine, Thick and Albuminous 55
Urine, Suppression of 56

V

Valuable Recipes 156
Veterinary Surgeons 159
Vermin 21

W

Warts 20
Weights and Measures 101
Wind-galls 92
Worms, in Dogs 154
Worms, Lung 132
Worms, Intestinal 133

Y

Yellow Water 53

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